The Independent Guide to IBM Personal Computers

Volume 1 Number 7 $3.00

Checking Out Spelling Programs

Comparing Letter Quality Printers

Guide to PC Typesetting

PLUS: The First Cigar-Factory PC





20 Word Processing Programs for the IBM Personal Computer

Copyrighted material

Your tool for modern times demands financial software this sophisticated

Financier™ Personal Series: The most sophisticated financial software you can buy for your IBM® Personal Computer.

When you invest in one of the most advanced personal computers money can buy, it only makes sense to follow through with a software investment to match.

That investment is the Financier Personal Series. It's the integrated personal financial system designed from the ground up exclusively for IBM's Personal Computer.

Financier is a totally integrated software package that lets you capture and organize financial data regardless of your background in computers or accounting.

With Financier you can quickly and easily produce reports for budgets, net worth computation, bank accounts, property inventories, credit card usage, even detailed tax records. And, Financier's flexibility lets you maintain a virtually unlimited number of bank, budget, and tax accounts. The only realistic limitation on the number of accounts is your available disk space.

Financier is remarkably easy to use because its sophisticated data base management techniques require you to enter data only once. The data is then available to all of Financier's reporting functions, including automatic bill-paying and check-writing.

The Financier Personal Series is just one part of a complete financial planning and record keeping system for your IBM Personal Computer. Also available are the Financier Tax Series for personal and professional use, and the Financier Investor Series for portfolio management and securities analysis.

So, if you've invested in the tool for modern times, invest in the software for modern times. The powerful, flexible Financier Personal Series.



"It's great to finally see software comprehensive enough to be called a 'system'. Financier combines features of a 'home finance' package with the quality of the best professional or commercially used software. An ideal package to add to the IBM PC for use by individuals as well as financial planners and accountants."

— Mike Rohrbach

Chairman, 850-member IBM PC Users Group of the Boston Computer Society
Executive Vice President, International Market Resources, Inc., Wellesley MA (software consultants)

FINANCIER

MODERN SOFTWARE FOR MODERN TIMES

FINANCIER PERSONAL SERIES: $195. TAX SERIES: $130.

For additional information, or to order directly, call:
(617) 366-0950 [24-hour, MasterCard and Visa accepted]
Financier, Inc. 11 Flanders Road, Westboro MA 01581

Financier System Requirements: IBM Personal Computer, At least 64Kb of RAM, Two disk drives, 80 column display, IBM Personal Computer DOS, IBM Personal Computer Disk BASIC

Now available at the following authorized IBM dealers: **SEARS BUSINESS SYSTEMS CENTERS, ASD OFFICE SYSTEMS** (NY), **CMB INC.** (KY), **COMPUSHOP INC.** (CO, IL, TX), **COMPUSHOP OF GEORGIA, INC.** (GA), **COMPUTER CITY** (CA), **COMPUTER CONCEPTS** (LA, TX), **THE COMPUTER MART** (IL, MI; WINDSOR, ONT.), **THE COMPUTER ROOM** (IN, MI), **COMPUTER SYSTEMS SPECIALIST** (NY), **COMPUTERLAND** (participating dealers) **COMPUTERWORKS** (CT), **FREDERICK COMPUTER PRODUCTS** (MD), **FUTURE DATA** (NYC), **MICRO CENTER** (OH), **PERSONAL BUSINESS COMPUTERS** (UT), or phone **(617) 366-0950** to locate the dealer near you.

© 1983 FINANCIER, INC.
Copyrighted material

The Independent Guide to IBM Personal Computers

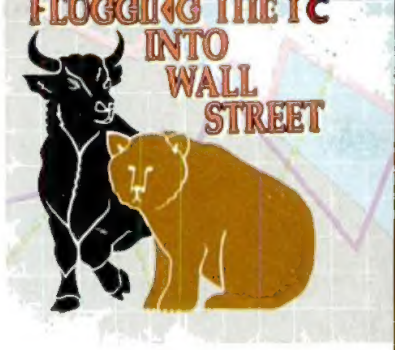
Volume 1 Number 7 *$3.00*

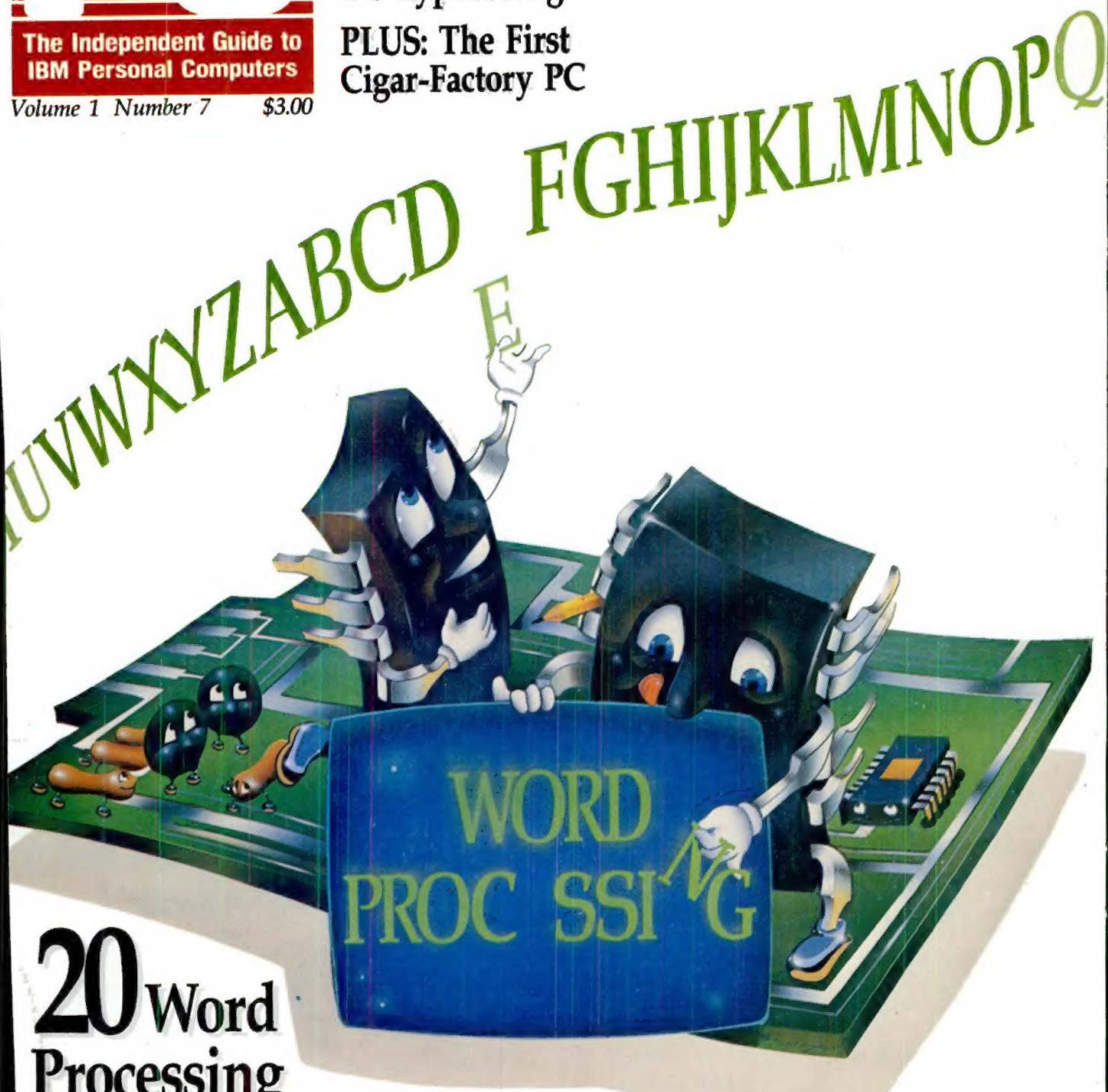
Checking Out Spelling Programs

Comparing Letter Quality Printers

Guide to PC Typesetting

PLUS: The First Cigar-Factory PC





20 Word Processing Programs for the IBM Personal Computer

Copyrighted material

Financier™ Personal Series: The most sophisticated financial software you can buy for your IBM® Personal Computer.

When you invest in one of the most advanced personal computers money can buy, it only makes sense to follow through with a software investment to match.

That investment is the Financier Personal Series. It's the integrated personal financial system designed from the ground up exclusively for IBM's Personal Computer.

Financier is a totally integrated software package that lets you capture and organize financial data regardless of your background in computers or accounting.

With Financier you can quickly and easily produce reports for budgets, net worth computation, bank accounts, property inventories, credit card usage, even detailed tax records. And, Financier's flexibility lets you maintain a virtually unlimited number of bank, budget, and tax accounts. The only realistic limitation on the number of accounts is your available disk space.

Financier is remarkably easy to use because its sophisticated data base management techniques require you to enter data only once. The data is then available to all of Financier's reporting functions, including automatic bill-paying and check-writing.

The Financier Personal Series is just one part of a complete financial planning and record keeping system for your IBM Personal Computer. Also available are the Financier Tax Series for personal and professional use, and the Financier Investor Series for portfolio management and securities analysis.

So, if you've invested in the tool for modern times, invest in the software for modern times. The powerful, flexible Financier Personal Series.

FINANCIER™



"It's great to finally see software comprehensive enough to be called a 'system'. Financier combines features of a 'home finance' package with the quality of the best professional or commercially used software. An ideal package to add to the IBM PC for use by individuals as well as financial planners and accountants."

— Mike Rohrbach

Chairman, 850-member IBM PC Users Group of the Boston Computer Society
Executive Vice President, International Market Resources, Inc., Wellesley MA (software consultants)

FINANCIER PERSONAL SERIES: $195. TAX SERIES: $130.

For additional information, or to order directly, call:
(617) 366-0950 [24-hour, MasterCard and Visa accepted]
Financier, Inc. 11 Flanders Road, Westboro MA 01581

Financier System Requirements: IBM Personal Computer, At least 64Kb of RAM, Two disk drives, 80 column display, IBM Personal Computer DOS, IBM Personal Computer Disk BASIC

Now available at the following authorized IBM dealers: **SEARS BUSINESS SYSTEMS CENTERS, ASD OFFICE SYSTEMS (NY), CMD INC. (KY), COMPUSHOP INC. (CO, IL, TX), COMPUSHOP OF GEORGIA, INC. (GA), COMPUTER CITY (CA), COMPUTER CONCEPTS (LA, TX), THE COMPUTER MART (IL, MI; WINDSOR, ONT.), THE COMPUTER ROOM (IN, MI), COMPUTER SYSTEMS SPECIALIST (NY), COMPUTERLAND** (participating dealers) **COMPUTERWORKS (CT), FREDERICK COMPUTER PRODUCTS (MD), FUTURE DATA (NYC), MICRO CENTER (OH), PERSONAL BUSINESS COMPUTERS (UT),** or phone **(617) 366-0950** to locate the dealer near you.

Copyrighted material



Microsoft's RAMCard™ with RAMDrive™ takes the whir, click and wait out of the IBM PC.

Solid State Disk. When you add the Microsoft™ RAMCard to your IBM® Personal Computer, you also add RAMDrive, which lets you use memory as you would normally use a disk. That gives you "disk access" that's typically 50X faster than disk. Without the whirring, clicking and waiting of mechanical data access.



Fast and easy. You simply designate a portion of memory as "disk." RAMDrive takes it from there, instructing the program to go to RAM rather than disk whenever data access is needed. The result is faster, smoother, no-wait computing.

64K to 256K. You can start small, but think big. Start with 64K and add Microsoft RAMChips™ in 64K blocks. Or, buy the full 256K now. Either way, you get both RAM and "disk" capabilities. All in a single slot.

A complete subsystem. The RAMCard package comes complete with the memory board (64K, 128K, 192K or 256K), documentation, a diskette which adds RAMDrive and, a full one year warranty.

More tools for IBM. Microsoft wrote PC-DOS, the standard operating system for the IBM Personal Computer. And Microsoft is first in providing a full range of languages, applications programs and utilities for the IBM PC. The addition of RAMCard with RAMDrive is our way of saying that Microsoft will continue to offer more and better supported tools for the IBM PC.

See for yourself. Ask your Microsoft or IBM PC dealer for a demonstration of both main memory and disk features of the Microsoft RAMCard with RAMDrive. It's solid state memory you can also use like a disk. And it takes the whir, click and wait out of the IBM PC.

BETTER TOOLS FOR MICROCOMPUTERS

MICROSOFT

Microsoft Corporation
10700 Northup Way
Bellevue, WA 98004

IBM is a registered trademark of International Business Machines Corp. Microsoft, RAMChips, RAMCard, and RAMDrive, are trademarks of Microsoft Corporation.

Copyrighted material



Copyrighted material

SUPERWARE™

SuperCalc, SuperWriter, Super SpellGuard, SuperChart, SuperData™-File Manager

Fly the first family of super powered software.
Super-Fast. Super-Easy.
Super-Reliable. Service-Free.
SORCIM SUPERWARE!

Now running on more computers than anything else you can buy. Many more operating systems, CP/M,* CP/M 86,* IBM DOS, and MS/DOS**-based. With common interface commands that let you change programs without a super-headache.

FLY SORCIM SUPERWARE.
LEAVE THE REST BEHIND.

*CP/M and CP/M 86 are registered trademarks of Digital Research, Inc.
**MS/DOS is a registered trademark of Microsoft Corporation.

For the Sorcim dealer nearest you call toll-free:
800-762-4754
In California, Alaska, Hawaii, call 408-942-1727

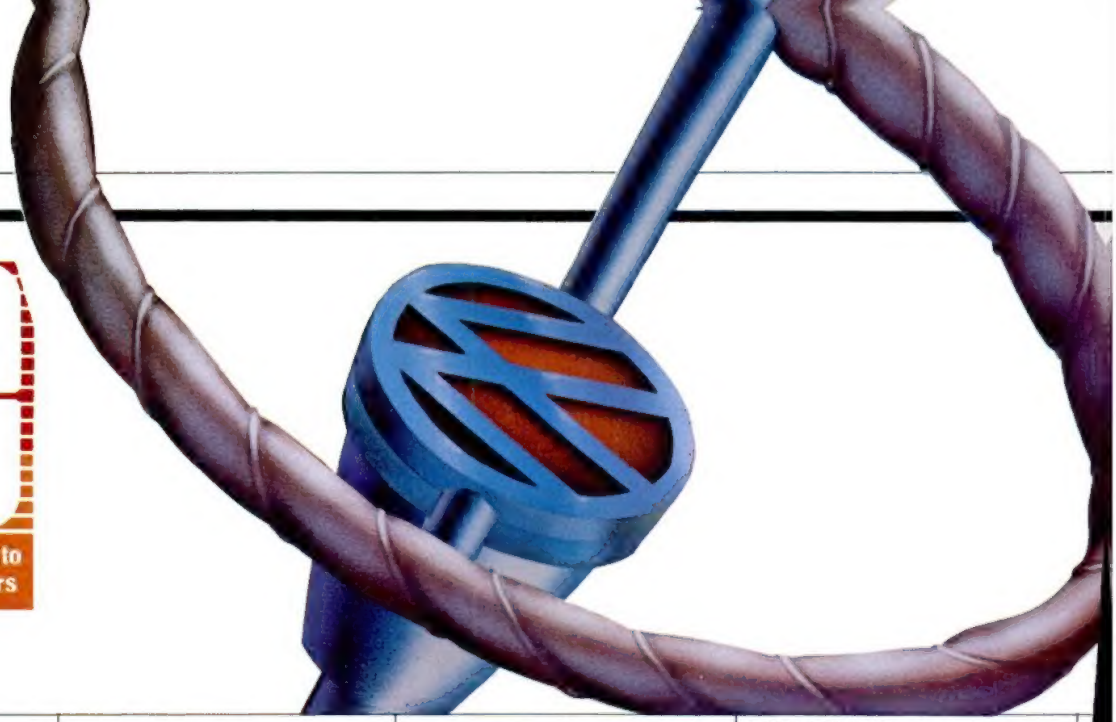
SORCIM

SORCIM CORPORATION, 2310 LUNDY AVENUE, SAN JOSE, CALIFORNIA 95131

WE LEAVE THE REST BEHIND.

SuperWare, SuperCalc, SuperWriter, Super SpellGuard, SuperChart and SuperData are all trademarks of Sorcim Corporation.

Copyrighted material



The Independent Guide to IBM Personal Computers

Volume 1 Number 7
November 1982

In This Issue

PC INTERVIEW

The Kingpin of MicroPro/ Lawrence J. Magid 48
Seymour Rubinstein reveals the secrets of his success.



SOFTWARE

PC Focuses on Word Processing 71
A probe into the market for word processing programs.

***Volkswriter 1.1*: Camilo Wilson's Claim To Fame/ Andrew Fluegelman** 72
A no-nonsense program that executes well without a lot of extras.

The 1982 *Volkswriter*/ Neil Zachary 85
Updated and unblemished.

***The Word Worker*/Corey Sandler** 93
Capable, clearly written, and comparitively cheap—*The Word Worker* works.

A *PowerText* Performance/Bill Grout 102
A program that boasts a grand array of features.

***The Benchmark* Word Processor/George D. Hughes, Jr.** 109
A smooth mover that makes a mark among the competition.

Write-On!/Harry Miller 118
Read ahead before writing off this low-cost, line-oriented editing program.

The PC Gets *WordStar*/ Danny Goodman 125
Historically well-reputed and one answer to a writer's dreams.

PC Magazine Guide to Word Processing Programs F-2

Color Your Keyboard 136
WordPlus-PC: A new progeny from Professional Software, Inc.

Personal Writing with *Wordvision* 139
A low-cost program for all your writing needs.

Cast a Spell on Your Writing/Lawrence J. Magid 141
A review of computerized spelling checkers.

Easy Spelling for Poor Spellers/Karen Phillips 145
Replace that well-used dictionary with an on-screen, 88,710-word lexicon.

HARDWARE

How to Choose a Letter Quality Printer/Jeremy Joan Hewes 148
Letter quality printer hints and prices for every need.

TAKING THE MEASURE

The PC's Keys/Jim Edlin 175
Seasoned users say it looks better than it works.

OPERATING SYSTEMS

CP/M-86 and MS-DOS: A Comparative Analysis/ David B. Hughes 181

FOLLOW-UP

Equipping Your IBM PC for Word Processing/ Corey Sandler 195

IBM EYE

The $87.50 Run(around)/Jim Edlin 203
IBM's licensing policy for the BASIC Compiler package.

MARKETPLACE

In Search of a Word Processing Program/ Dr. Larry Press 208
Know which key features to consider when choosing a word processor.

The Hards and Softs of Ergonomics/Richard Koffler 225
Designware to minimize the ache, pain, and strain of computer use.



Copyrighted material

Capturing Keystrokes/ Daniel Remer 232
How to use the IBM PC to set type.

BUSINESS

Dot Matrix and the Written Word/Corey Sandler 222
Why dot matrix printers haven't made the grade.

Word Processing as a Profession/Janet McCandless 246
A look at one of the most sought after professions of the '80s.

PROGRAMMING

The PC Speed Test for Printers/Jeremy Joan Hewes 243
Rate the speed of your printer against the one you didn't buy.

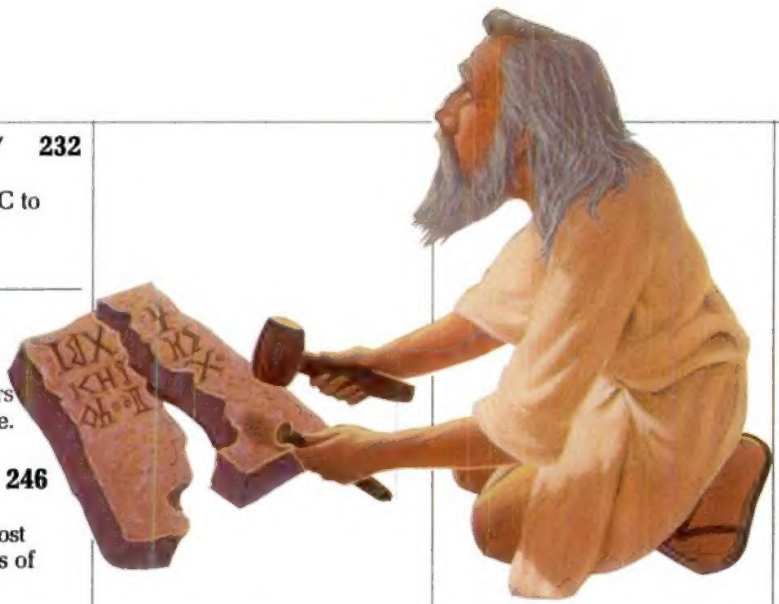
Color Palettes and Color Chips/Karl Koessel 305
Permutate your color parameters.

LEGAL

How To Copyright Your Software/Daniel Remer 264
Part Two: Understand the copyright forms and filing procedures.

FINANCE

Life among the Bulls and Bears/Andrew Williams 272
A stock market information service that lets you watch the Dow Jones soar without going to Wall Street.



PRODUCT REPORT

The Portable PC: A Preview of the Dynalogic Hyperion/Frank J. Derfler, Jr. 284

Presenting a 16-Bit Christmas 365
Stocking-stuffers and gift ideas for Xmas cheer.

COMMUNICATIONS

User-Friendly Word Processors: The Iron Hand in the Velvet Glove/Clifford Barney 286

The Link Between Word Processing and Communications/Frank J. Derfler, Jr. 295
A fast, inexpensive method for transferring text and data files.

PC PROFILES

A Cigar-Factory PC and the *VisiCalc* Soccer Standings/Jeremy Joan Hewes 313

BOOK EXCERPT

Writing and Editing with a Word Processor/ Hal Glatzer 328
Introduction to Word Processing: A book to smooth the transition from typewriter to computer.

AGE OF ALTAIR

The Strange Case of Eddie Smith/David Bunnell & Eddie Currie 347
Part VI reveals how "The Big Fromage" deals with a serious personnel problem in the shipping department.

COLUMNS

David Bunnell 23

Zero Base Thinking/ Jim Edlin 25

Jean Yates and Dr. Rebecca Thomas 323

DEPARTMENTS

Letters to PC 13
P-Communiques 29
PC Tutor/Bob Rice 43
PCartoon 220
User-to-User/Andrew Fluegelman 299
Club News/Susan Hurley 291
PC: BlueBook 371
New on the Market 385
Advertiser Index 394
Coming Up 397
Wish List 400



COVER

Illustration by Marc Eriksen

Copyrighted material



PC
The Independent Guide to IBM Personal Computers

DAVID H. BUNNELL
Publisher & Editor in Chief

CHERYL WOODARD
Associate Publisher & Director of Marketing

JACQUELINE POITIER
Assistant Publisher/Art & Production

SUSAN R. KELLER
Assistant Publisher/Editorial & Circulation

BRIAN DESSIN DAY
Design Director

Noreen Giannini
Assistant to the Publisher

EDITORIAL

Managing Editor: Susan R. Keller

Associate Editors: Jim Edlin, Andrew Fluegelman, Jeremy Joan Hewes, Kearney Rietmann, Christine Whyte. **Technical Editor:** Steven Cook

Senior Copy Editor: Evelyn Spire. **Copy Editors:** Daniel Farber, Jane Magid, Joe Matazzoni, Barry Owen

Editorial Coordinator: Cindy Hamburger. **Editorial Assistants:** Susan Hurley, Lindy Wankoff **Administrative Assistant:** Sue Robinson. **Contributing Editors:** Dr. Eddie Currie, Hal Glatzer, Dr. Rebecca Thomas, Carl Warren, Jean Yates. **PC Lab Director:** Dr. Larry Press. **Book Editor:** Les Cowan. **Programming Editor:** Karl Koessel. **Data Communications:** Frank J. Derfler, Jr.

ART & PRODUCTION

Associate Art Director: Mick Wiggins

Production Artists: Suzanne Anderson, Emily Burch, Dennis McLeod, Monica Thorsnes. **Illustrators:** Stuart Bradford, Don Day, Jack Desrocher, Dark Dusting, Marc Ericksen, Alice Lager, Jim Ludkte, Chuck Pyle, Spain Rodriguez, Mick Wiggins. **Photographers:** Ed Kashi, Linda V. Williams

Assistant Production Manager: Frances Mann **Production Editor:** Ellyn Hament. **Advertising Production Coordinator:** Nan Cassady **Telecommunications Specialist:** Eric Brown

ADVERTISING SALES

Account Managers: J. Mark Doss, Noreen St. Pierre, D. Rodney Brooks, Meredith Browning. **Sales and Marketing Coordinator:** Brooke Hazard. **Sales Assistant:** Jan Dente **Sales Secretary:** Loretta Giglione

PC: BLUE BOOK

Manager: Niki Stranz. **Sales Representatives:** Ralph Ames, Christopher Van Dyke. **Sales Assistant:** Carol Watson

CIRCULATION

Dealer Sales: Bill Cox. **Customer Service:** Lorrie Poch

ADMINISTRATION

Bookkeeping & Accounting Manager: Sarah Cox. **Office Manager:** Cheryl Kidd. **Administrative Staff:** Claire Bovey, Pat Murphey, Phyllis Stewart, Ray Stewart, Rick Thng. **PC Helpers:** Lorrie Berg, Peter Cross, Loren Gerstein, Sydney Gillette, Jennifer Poitier, Mara Bunnell, Aaron Bunnell

PC: The Independent Guide to IBM Personal Computers (ISSN applied for) is published monthly for $27 per year or $46 for 2 years (rates double outside U.S. and Canada) by Software Communications, Inc., 1528 Irving St., San Francisco, CA 94122. Second-Class Postage Paid at Mendota, Illinois. Application to mail at Second-Class Postage Rates is pending at San Francisco, California. POSTMASTER: Send address changes to PC, 1528 Irving St., San Francisco, CA 94122.

Editorial and Business Office: 1528 Irving St., San Francisco, CA 94122 (415/753-8088). Editorial only (415/564-0141).

CompuServe 70370,532 **The Source** ST0 948

PC is an independent journal, not affiliated in any way with International Business Machines Corporation. IBM is a registered trademark of International Business Machines Corp. Entire contents Copyright © 1982 Software Communications, Inc. All rights reserved; reproduction in whole or in part without permission is prohibited. The following are trademarks of Software Communications, Inc: PC, PC: The Independent Guide to IBM Personal Computers, PC Guide, PCM, Personal Computer Guide, Home Computer Guide, Computer Guide, PC-Lab, P-Communiques, PC Playpen, Project PC, Wish List, PC: BlueBook.

Printed in the United States of America.

Copyrighted material

As IBM would design it

The Personal Hard Disk™ from Corona™. Only for the IBM Personal Computer.

Corona specialization makes the difference:

It fits right in—right inside the IBM Personal Computer, with no external power supply.

And it makes friends fast—with self-documenting, menu-driven, very "user-friendly" software.

It responds to your needs—for multiple operating systems on the same disk at the same time, in flexible partitions that grow as needed.

It backs you up—on floppies, using "selective" backup (by date, by volume, by category), so an additional backup device is not needed.

And it has reliability you can count on—combining exclusive use of Seagate drives with Corona's DataGuard™ and FailSafe.™



And the price?

$1995 for 5 MB,

$2495 for 10 MB

Experience the difference specialization makes.

Ask your dealer to show you the Corona Personal Hard Disk (or call us for dealership and quantity purchase information).

corona

The Third Generation Microcomputer Company

Corona Data Systems 31324 Via Colinas, Section 110, Westlake Village, CA 213-706-1505

CONCURRENT CP/M-86™ LETS YOUR COMPUTER DO MORE THAN ONE THING AT A TIME.

Another productivity breakthrough from the creators of CP/M.®

If you have to wait impatiently for your microcomputer to finish a job before moving on to another task, you need Concurrent CP/M-86. Digital Research introduces new software technology to increase the productivity of 16-bit microcomputers, including IBM's Personal Computer.

Using Concurrent CP/M-86, you can run several programs simultaneously, switching instantly from one program to another. For the first time you can write text while printing other documents. For the first time you can see directories without leaving your application program. For the first time you can edit programs while your computer compiles. Concurrent CP/M-86 is the best investment you can make in microcomputing, because it multiplies the value of your hardware, it lets you use all the CP/M-86 compatible programs, and if you're developing software, it insures that you're on the crest of the hottest new wave in the business.

As the chart shows, there's nothing else like Concurrent CP/M-86 in the microcomputing world, and only Digital Research offers it. For information, call or write Digital Research Inc., P.O. Box 579, 160 Central Ave. Pacific Grove, California 93950 (408) 649-3896.



Europe
Vector International
Research Park
B-3030 Leuven
Belgium
Telex 26202 VECTOR

Far East
6 Floor A. Y. Building
3-2-2 Kitaaoyama,
Minato-ku
03-403-2120
Telex 2426875 MSA

DIGITAL RESEARCH™
The creators of CP/M.®

See us at NCC Booth #A507



	CONCURRENT CP/M-86	CP/M-86	IBM PC DOS	UNIX™	iRMX-86™
Available on IBM Personal Computer	•	•	•		
Single-User with Background Consoles	•				
Real-Time Control	•				•
Password Protection	•			•	•
Time and Date Stamps	•		•	•	•
Record and File Locking	•				•
Local Area Network Support	•	•			•
Shipped with Editor, Assembler and Debugger	•	•			
1 Megabyte Memory Management	•	•		•	•
Winchester Disk Support	•	•		•	•
CP/M File Compatible	•	•			

ADDITIONAL FEATURES:

- 32 Megabyte File Capacity
- 512 Megabyte Disk Capacity
- Real-time message passing nucleus essential for multi-tasking, data communications and industrial control applications.
- Supported by existing CP/M-86 compatible languages.
- Upward compatible with MP/M-86.™

CP/M is a registered trademark of Digital Research Inc.
CP/M-86, Concurrent CP/M-86, and the Digital Research logo are trademarks of Digital Research Inc.
IBM PC DOS is a trade name of International Business Machines Corp
UNIX is a trademark of Bell Laboratories
iRMX-86 is a trademark of Intel Corporation.
© Copyright 1982 by Digital Research

ARE YOU STILL PRINTING WITHOUT USING A MICROBUFFER?



Copyrighted material

WHY?

USING YOUR COMPUTER TO DRIVE YOUR PRINTER IS A WASTE OF TIME.

While your printer is running, your computer is tied up . All you can do is twiddle your thumbs until the program is finished.

MICROBUFFER ALLOWS YOU TO PRINT AND PROCESS SIMULTANEOUSLY.

You just dump your printing data directly to Microbuffer, whoosh!, and continue processing.

Microbuffer accepts data as fast as your computer can send it. It first stores the data in its own memory buffer, then takes control of your printer.

It's that easy.

THERE IS A MICROBUFFER FOR ANY COMPUTER/PRINTER COMBINATION.

Microbuffers are available in Centronics-compatible parallel or RS-232C serial versions.

FOR APPLE II COMPUTERS, Microbuffer II features on-board firmware for text formatting and advanced graphics dump routines. Both serial and parallel versions have very low power consumption. Special functions include Basic listing formatter, self-test, buffer zap, and transparent and maintain modes. The 16K model is priced at $259 and the 32K, at $299.

FOR EPSON PRINTERS, Microbuffer is $159 in either an 8K serial or a 16K parallel version. The serial buffer supports both hardware handshaking and XON-XOFF software handshaking at baud rates up to 19,200. Both interfaces are compatible with Epson commands including Graftrax-80 and Graftrax-80+. Both are user-expandable to 32K.

ALL OTHER COMPUTER/PRINTER COMBINATIONS are served by the in-line, stand-alone Microbuffers. (Pictured here, twice actual size.)

Both serial and parallel versions are expandable up to 256K.

The serial stand-alone will support different input and output baud rates and handshake protocol. The 32K model starts at $299, $349 for 64K, and 64K add-ons (for up to a total of 256K) are just $179.

SIMPLE TO INSTALL.

Microbuffer II is slot-independent. It will fit directly inside the Apple II in any slot except zero.

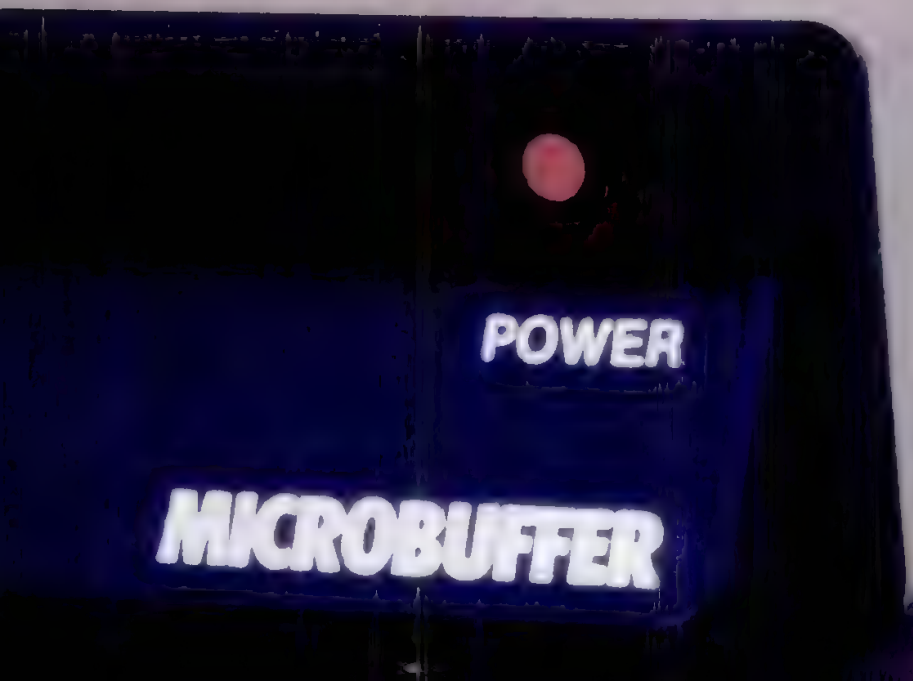
Microbuffer for your Epson mounts easily in the existing auxiliary slot directly inside the Epson printer.

The stand-alone Microbuffer is installed in-line between virtually any printer and any computer.

MICROBUFFER FROM PRACTICAL PERIPHERALS.

When you think of how much time Microbuffer will save, can you afford to *not* have one?

PRACTICAL PERIPHERALS, INC.™
31245 LA BAYA DRIVE
WESTLAKE VILLAGE, CA 91362
(213) 991-8200



See us at COMDEX™
Nov. 29-Dec. 2, 1982
Las Vegas Convention Center
Las Vegas, Nevada

"I GOT WHAT I WANTED"

COMPREHENSIVE SOFTWARE



PC TUTOR

Who can blame him? He knows that, with P.C. Tutor, he can get rid of all the confusing instruction manuals. All he has to do is place the P.C. Tutor plain-language diskettes into his IBM personal computer and learn by doing.

Designed by computer training specialists, P.C. Tutor makes learning easier, faster, cheaper.

Requires 64KB, 2 disk drives, an 80-character display and MS-DOS.

A steal at only $79.95 (California residents add $5.20 sales tax).
See your IBM P.C. dealer. Or send a check or money order to:

Dealer inquiries welcome

Comprehensive Software Support P.O. Box 90833 Los Angeles, California 90009

*This product is in no way related to BC Magazine nor the column "BC Tutor"

Letters To PC

Subscription Gets the Wrap

Your treatment of *PC* subscribers is such that I feel the need to complain. For the third issue in a row the newsstands and computer stores had their *PC*'s before I received mine. This is unfair to subscribers who pay in advance but must wait for their copies while single-issue purchasers are enjoying theirs. It is tempting to buy a copy, but paying twice is a bit much.

Williard O. Ward
Greenbrae, California

There are two reasons that dealers get their magazines before subscribers. Both are equally embarrassing. Wrapping subscriber copies in a protective wrapper adds 2 or 3 days to shipping time. In addition, PC has not yet received its second-class mailing permit from the post office. We are working to remedy this situation by the end of the year. In the meantime we are grateful for your patience and understanding.—Ed.

Patience Pays Off

It's September 29 and I just got my September issue of *PC*. I did get it in September, but little did I know when I resisted buying it from ComputerLand that I would have to wait until the last day of the month before I would get my copy. Can I expect that my copy will always lag 3 weeks behind delivery to the stores?

A few issues back there was an item about Jim Edlin's revolutionary word processing editor (for $50 no less). Whatever happened to that?

Ron Lautmann
Mt. Kisco, New York

Concerning Edlin's word processor, your patience has paid off. Edlin's low-cost wonder program is reviewed in this issue. Hopefully, your patience with PC and the mail lag will also pay off. Thanks for waiting.—Ed.

PC Color

I am disappointed in the limited color capabilities of the IBM PC. Please correct me if I'm wrong, but it is my understanding that in the low-resolution mode, where 16 colors are available, the smallest pel (picture element) possible is 4x4 pixels. The medium-resolution color/graphics



mode's smallest pel is 2 pixels and allows a very limited choice of colors—one of the 16 background colors with a choice of two sets of three predetermined colors each. In truth, there is no high-resolution color mode for the PC.

Do you know of a manufacturer that sells a color mode with true high-resolution color/graphics capabilities?

Larry E. Johnson
Minneapolis, Minnesota

Plantronics/Frederick Electronics in Frederick, Maryland, sells Colorplus, a product that is PC compatible and allows 80-character, four-color graphics in enhanced high-resolution (640x200) mode and 40-character, 16-color graphics in medium resolution (320 x 200) mode. For more colors and finer graphics, Control Systems of Minneapolis, Minnesota has a more expensive product that gives 1024x1024 pixels of any 16 colors.—Ed.

Protest on Pascal

I enjoyed Dr. Larry Press's review of IBM's Pascal Compiler (*PC Lab*, August 1982), and I certainly agree that this compiler is not for beginners. I think it is unfair, however, to say that the compiler produces programs that run slowly. The speed of a program depends greatly on what debug options you choose when you compile it. The debug options are instructions to the compiler that tell it whether to report such problems as numbers that are too large, overflow of the stack, and array indices out of range. These options are described in the "Metacommand" section of the Pascal manual. Since Press's article says nothing about them, I assume that he left them turned on by default. This would explain why his program ran so slowly.

Turning to another aspect of the compiler, an important fact that the article did not mention is that IBM Pascal cannot draw pictures on the screen (using the color/graphics adapter board) or play music on the built-in speaker. These are serious limitations to the language.

Brian Schmidt
Chelmsford, Massachusetts

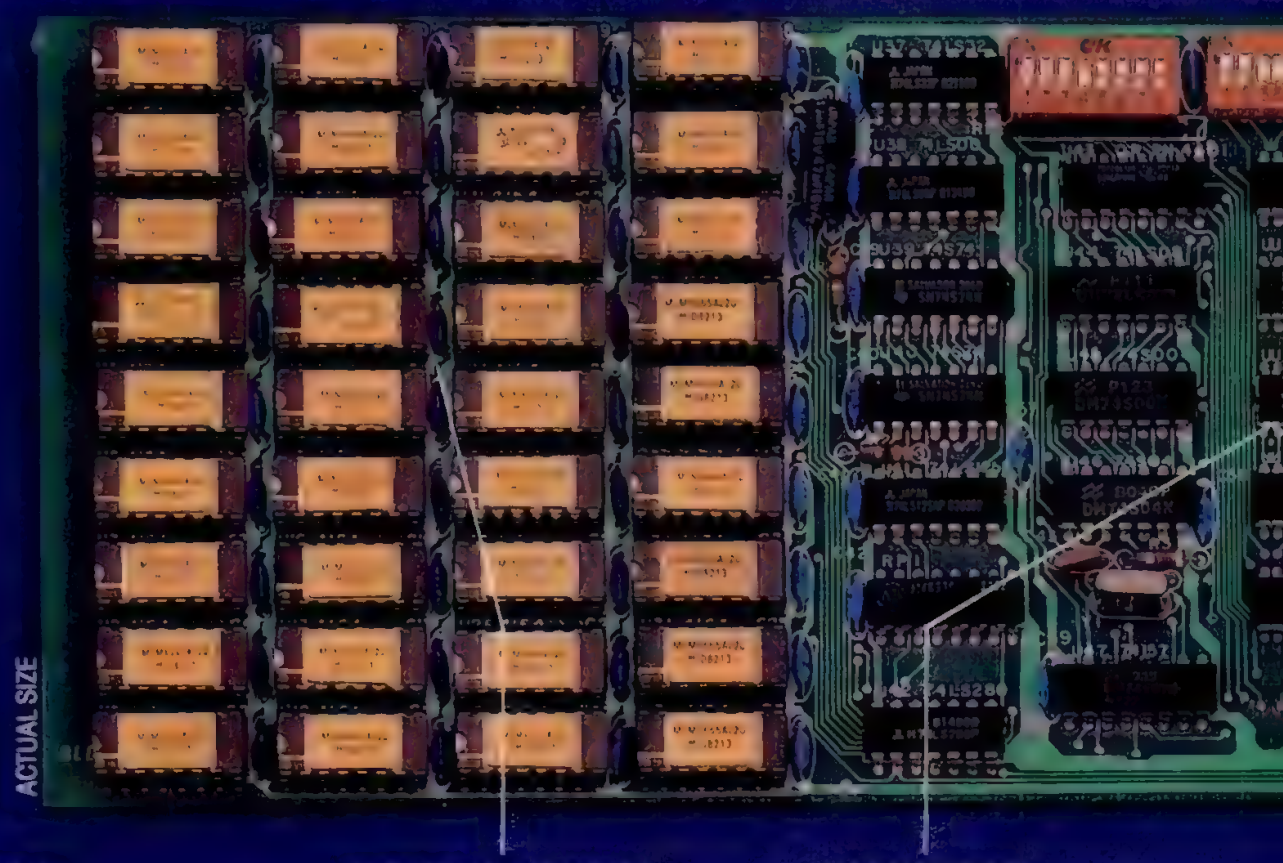
No Poison Pen

To date I have come out on the short end of the stick with the IBM PC versions of MicroPro's *WordStar* and *MailMerge*. MicroPro has some very fine products, but it apparently does not rank the support of its IBM PC customers as a high priority. I am not a writer of poison pen letters—strong yes, but not poison. I usually find that when I have difficulties, I am not the only one with a problem. If you have received other letters from people who are dissatisfied with MicroPro, please print them.

QUADBOARD™

THE FIRST AND ONLY BOARD YOUR IBM PC MAY EVER NEED.

Your IBM personal computer is a very versatile piece of equipment. Perhaps more versatile than you realize. New applications and functions are being developed every day. Now with Quadboard by Quadram you can keep your options open for tomorrow's technology. Following in the tradition of Quadram Quality, four of Quadram's best selling IBM boards have been combined into one board. Your remaining slots will be left free and available to accommodate future expansion needs and uses which you may not even be able to contemplate today.



PROVEN DESIGN.
Quadram has been shipping IBM boards with each of the Quadboard functions on separate boards since December, 1981. They are still available as separates (including a Dual Port Async Board) for those who desire a qualify board but do not need to keep slots open for future expansion. And they all come with a one year warranty from the leader in technology applications.

256K MEMORY EXPANSION.
Socketed and expandable in 64K increments to 256K, full parity generation and checking are standard. A Quadboard exclusive feature allows parity to be switch disabled to avoid lock-up upon error detection. The dip switches also allow it to be addressed starting on any 64K block so that it takes up only as much as it has memory installed. Memory access and cycle time naturally meet all IBM specifications.

CLOCK/CALENDAR.
Quadboard eliminates the hassle of manually inputting the date on system boot-up by providing for the clock and all software routines necessary for inserting the appropriate programs on your diskettes. The internal computer clock is automatically set for compatibility with most software routines which utilize clock functions. On-board battery keeps the clock running when the computer is off.

BY QUADRAM

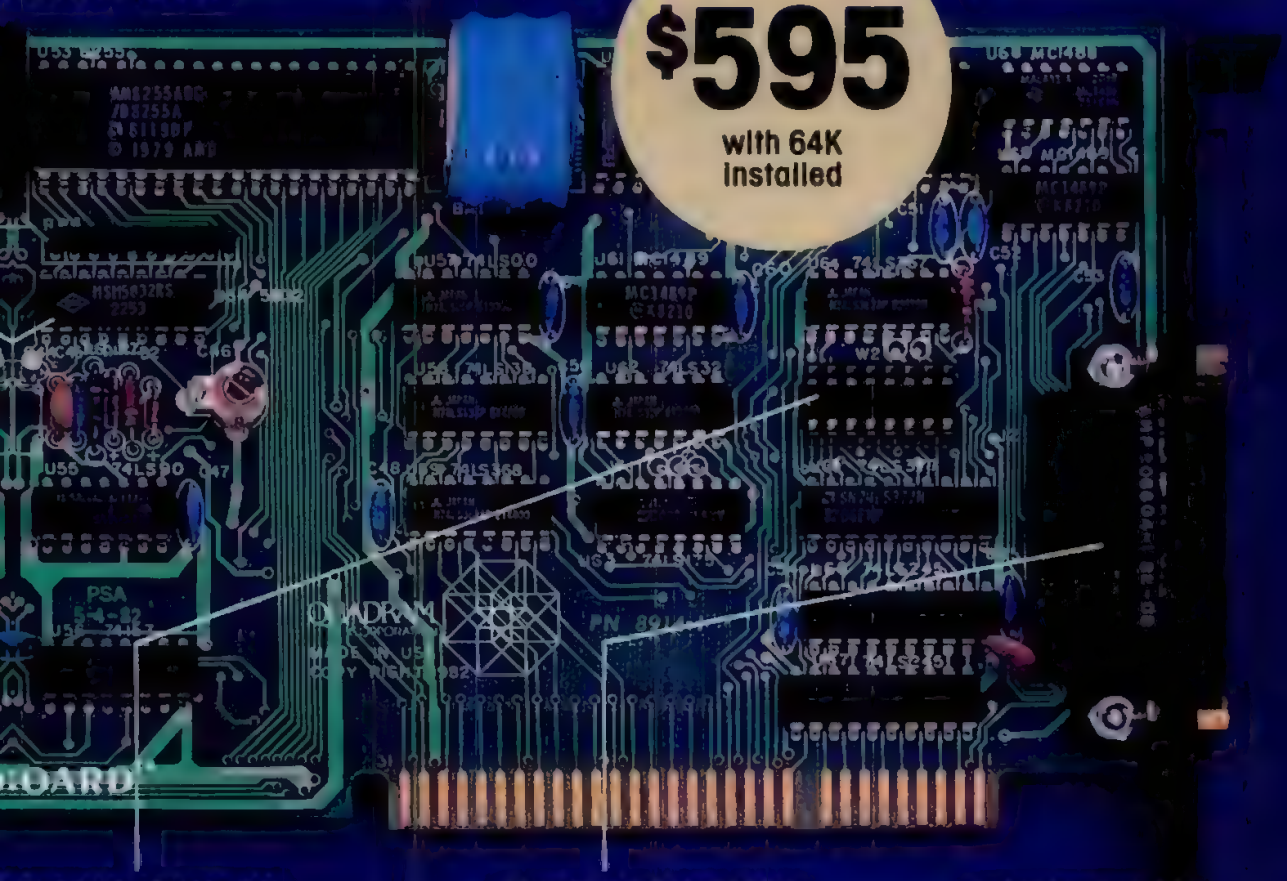
ALL ON ONE BOARD

Now you can utilize all the PC's capacity with Quadram's extremely flexible configurations. And it's totally compatible with IBM hardware, operating systems, and high level languages. It's a full-size board that can be inserted into any free system slot and it even includes a card edge guide for securely mounting the card in place.

SOFTWARE TOO!

With Quadboard you receive not only hardware but extensive software at no extra cost. Diagnostics, utilities, and Quad-RAM drive software for simulating a floppy drive in memory (a super-fast SOLID STATE DISK!) are all part of the Quadboard package.

$595
with 64K installed



PARALLEL PRINTER I/O.

A 16 pin header on Quadboard is used for inserting a short cable containing a standard DB25 connector. The connector is then mounted in the knock-out hole located in the center of the PC backplane. The parallel port can be switch disabled or addressed as Printer 1 or 2. No conflict exists with the standard parallel port on the Monochrome board. The internal cable, connector and hardware are all included.

ASYNCHRONOUS (RS232) COMMUNICATION ADAPTER.

Using the same chip as that on the IBM ASYNC board, the device is software programmable for baud rate, character, stop, and parity bits. A male DB25 connector located on the back connector is identical to that on the IBM Async Adapter. The adapter is used for connecting modems, printers (many letter quality printers require RS232), and other serial devices. Switches allow the port to be configured as COM1 or COM2 and the board fully supports IBM Communications Software.

INCREDIBLE PRICE!

Priced at $595 with 64K installed, $775 with 128K, $895 with 192K and $995 with 256K.

ASK YOUR DEALER.

All products are sold through local personal computer dealers. If yours does not stock Quadram, please ask him to call us at (404) 923-6666.

QUADRAM CORPORATION

4357 Park Drive / Norcross, Ga. 30093

Copyrighted material

Verbatim Datalife™ flexible disks now come in a bold, new storage box. But more important, they now come to you with a five year warranty.*

We can give you a warranty this long because we're confident the way we make Datalife disks will make them perform better, last even longer.

All of our Datalife disks feature seven data-shielding advances for greater disk durability, longer data life. To protect your data from head-to-disk abrasion. To shield your data against loss due to environmental conditions. To insure a longer lifetime of trouble-free data recording, storage and retrieval.

Every Datalife disk is extensively tested under the most extreme conditions. Critically-certified to be 100% error-free. Assuring you an added margin of performance, no matter what the operating conditions.

And we back it up with a five year warranty. Five times longer than the industry standard. Because Verbatim is the standard of excellence.

For flexible disks you can depend on–a lot longer –call (800) 538-1793. In California, or outside the U.S. call (408) 737-7771 collect for the name of your Verbatim dealer.

If you want longer data life, keep all your data on Verbatim Datalife. Our name is the promise. Our warranty is the proof.



Verbatim®

Here's the most exciting part of Verbatim's new packaging.

5 Year Warranty.

Letters To PC

Hopefully, MicroPro will get the message and improve the quality of its service and support for IBM PC customers.

Jess McIlvain
Bethesda, Maryland

False Advertising

Having searched extensively for suitable, special-purpose software, I have come to the conclusion that the computer industry is adhering to a principle generated in the early '60s with the advent of "System 360."

I refer to the practices of never telling the truth about what software actually does or does not do, and advertising products as being "available" when in fact they will not be ready for several months. This is blatantly false advertising and is forbidden by federal law. I am seriously considering providing details to the appropriate federal agency. I don't know if other software buyers are finding the same inaccuracies, but for me 20 years of lies is enough.

James Berry
Las Vegas, Nevada

No More Gossip

I refer to the *P-Communiques* article (*PC*, August 1982) that prompted IBM's Philip Estridge to write a letter denying the rumor that IBM was dropping ComputerLand as a PC dealer (*Letters to PC*, September 1982). As a publication that is supposed to enlighten the PC user, you should refrain from printing stories that only serve to confuse (and perhaps discourage) potential PC users.

I'm all for freedom of speech, but let's not forget about responsible journalism. I knew that the ComputerLand story was untrue almost as soon as I had read it, because directly to my left stood the owner of a local ComputerLand store who told me it was untrue.

P-Communiques is *PC*'s one weak link. You should either take corrective measures to make it a more reliable source of information or banish the column altogether. *PC* can afford to wait to verify new information before printing it, rather than resorting to rumors and gossip. People rely on *PC* for accurate updates. News items should continue to appear, but in the responsible, trustworthy, and authoritative manner that fits the *PC* image.

Randolph Madera
Forest Park, Illinois

Good, But No Cigar

PC's quality is not very good yet as far as information goes. You could increase the article-to-ad ratio—not that I'm complaining about the ads; they're very useful.

John Dodds
San Francisco, California

Not-So-Easy Writer

I had been warned about rampant misinformation and misrepresentation in the young personal computer industry. Despite these warnings, I nibbled at one advertisement and was bitten.

While searching for a suitable word processing program, I visited several computer stores to view demo disks. I talked with the people at Information Unlimited Software, Inc. about *EasyWriter II* and was impressed. After I purchased the package, I found out that my printer (a Daisywriter) was not listed as a support system in the documentation package.

My expensive investment sat idle because I couldn't convince my printer to run with the software. I called the company to ask for information not included in the documentation. The company would not answer questions over the phone; if I wanted to learn how to get the printer to work, I would have to send a $70 check to enroll in the support program.

For anyone trying to use *EasyWriter II* with a daisy wheel printer, here is the information free of charge: Configure the printer type in the housekeeping disk to "standard printer," and save your $70 for a software firm that is more interested in its customers.

Joel Zureick
Reynoldsburg, Ohio

No Pros at MicroPro

After reading MicroPro's glossy advertising, I bought the version of *WordStar* that is compatible with DOS 1.0. One of the major factors in my decision was the well-publicized ability of *WordStar* to do subscripting and superscripting. After breaking the seal on the package, I found a paragraph in the manual that casually informed me that subscripting, superscripting, microspace, justification, boldfacing, variation of line height, and character pitch selection were not possible in the IBM version. This was news to me as well as to the dealer who sold me the package.

Burton Alperson, Ph.D.
Los Angeles, California

Check the Manual

I am about to purchase an IBM PC and have found your magazine to be very helpful. In the article "PC On a Budget" (*PC*, September 1982) you said that to add 48K of RAM onto the mother board all you have to do is plug in the chips. How does the PC know you have added this additional 48K? I was told you have to change some switches. If so, which ones? You also said that the installation of the disk drives is tricky, but not difficult. Could you be more specific?

Michael Pate
Houston, Texas

The information you are looking for is in the IBM Guide to Operations, *Section 5,*

Digital Research & IBM™. Everything you need for better programming.

If you have an IBM Personal Computer or Displaywriter, you need several valuable tools to make programming faster and simpler. It all starts with CP/M-86,™ the 16-bit operating system that enables IBM's hardware to use popular application programs and superior Digital Research languages. With CP/M-86 you can use our Pascal/MT+,™ the most complete Pascal on the market; or CBASIC-86,™ the most accepted version of BASIC. We also offer PL/I-86,™ a microcomputer version of the powerful minicomputer language; plus Micro Focus CIS COBOL™ and Level II COBOL™ for most common business applications. Other special Digital Research tools include the Speed-Programming Package™ for streamlined programming, and SID-86,™ our symbolic instruction debugger that takes the work out of code debugging.

Whether you're a professional programmer writing applications for the IBM market, or the owner of a Personal Computer or Displaywriter, Digital Research has everything you need for programming. For more information call or write Digital Research. (408) 649-5500 or (408) 649-3896. 160 Central Avenue, Pacific Grove, California 93950.

DIGITAL RESEARCH™

Europe
Vector International Research Park
B-3030 Leuven, Belgium, 32 (16) 20-24-96
Telex: 26202 VECTOR

Far East
Microsoftware Associates
6 Floor A.Y. Building, 3-2-2 Kitaaoyama
Minato-ku, Tokyo 107, Japan, 03-497-0381
Telex: 2426875



The logo, tagline and names of DRI products are either trademarks or registered trademarks of Digital Research Inc. IBM is a trademark of International Business Machines, Corp., CIS COBOL and Level II COBOL are trademarks of Micro Focus Ltd.
© Copyright 1982, Digital Research Inc.

Letters To PC

under Options. Page 5-15 shows you exactly which switches to set to inform your system of options attached.—Ed.

Letter-to-Letter

I must take issue with Stewart Dean (*Letters to PC*, September 1982), who was highly critical of your magazine. I was floored by your scathing review of *EasyWriter*, not because it was critical, but because it was objective. Your first magazine saved me more than the price of a subscription. Yours is a dedicated magazine I can trust. The IBM PC is the most flexible machine available and is the only micro I would own. *PC* is the only computer magazine I read, and I certainly rejoice in your success.

Mike Donehoo
Marietta, Georgia

Teasing Tactics

I read the article "VisiCalc and Your Stock Portfolio" (*PC*, August 1982) and was so impressed that I immediately sat down to order myself a copy of the book. I found no address, however. In the future you might try avoiding such teasing tactics.

V. Jay Poscente
President, Megamin Developments Ltd.
Calgary, Alberta
Canada

The address is: OSBORNE/McGraw-Hill, 630 Bancroft Way, Berkeley, CA 94710.—Ed.

Equal Time for Techies

I want to see more technical articles. I realize that *PC* is oriented toward the professionals who use computers rather than those of us who make them work, and to the extent that this means a spiffy format, well-written articles, and dynamic graphics, I'm all for it. But remember that those same users are bright, inquisitive folks who want to understand the technical side better, and remember too that the PC has been hugely successful with the technical sophisticates. We need a forum, too.

Many of us guide our companies' computer policies and purchases, so we need good, comparative reviews of available products. Others actually program. We need to know which software development tools—compilers, debuggers, text editors—are worth the bucks. Just to get an idea of how valuable such information is, consider that the usual strategy for finding out what's adequate is to buy one of everything and play for a month.

Hanno Hinsch
Washington, D.C.

Alias Publication

Are the *IBM Personal Computer Journal* and the *Personal Computer Age* described in the "*PC* Product Guide" (*PC*, September 1982) the same publication? The addresses are identical and the descriptions are similar.

Larry Johnson
ST6361

The people in Tujunga, California, claim responsibility for one publication, Personal Computer Age, *which at one time was called the* IBM Personal Computer Journal.—*Ed.*

Bithood Re-questioned

Your usually high standards appear to have slipped somewhat in Hal Glatzer's article "The Bithood Question" (*PC*, August, 1982). I found several misconceptions and simplifications.

The article says, "An 8-bit microprocessor is limited to 64K RAM. ... A 16-bit microprocessor ... can handle addresses up to 16 places long ... and can work with up to ... 256K RAM." There are two kinds of addresses: the address relative to the beginning of the program and the physical address in memory. The processor converts the program address to the physical address by adding the physical starting location of the program, which it holds in an internal register, variously called a bank, base, page, relocation, or segment register. The maximum size of these two types of addresses are an outcome of design trade-offs between memory size and speed and circuit complexity. The maximum size has no direct connection to the internal register size, which is what is usually meant by the bit size of a machine.

The maximum size of a program address depends on the number of bits in the instructions that represent an address. This is typically 16 bits, giving an addressing capability of 64K. The maximum size of physical memory is arbitrary and can vary with different machines within a single series, e.g., DEC PDP-11.

The IBM PC uses an ingenious arrangement of not one, but four segment registers, each one of which can address 64K. Which register is used depends on the context: One points to instructions and is used by the processor every time it gets an instruction; another points to the stack and is similarly used for stack references; the last two point to data areas. They may all be changed by the programmer (even BASIC can control one segment register with the DEF SEG statement), and thus all of the physical memory can be used.

Elsewhere Glatzer says, "There are some tasks for which 8-bit processing is inadequate. One of the most useful is graphics. ... Generating high-resolution graphics requires an address for every pixel." Wrong. The IBM PC in high-resolution graphics mode uses 1 bit per pixel. This 640x200 bits = 12,800 bits = 16K, which is the capacity of the color graphics board.

Glatzer remarks, " ... the 16-bit proces-

Letters To PC

sor is not powerful enough for certain kinds of mathematical calculations. ... Floating-point arithmetic ... puts a huge demand on the computer for storage space and address capacity." Floating-point numbers are typically held in 32 or 64 bits, which is not large. For instance, a 64K segment in the IBM PC could hold 16,384 floating-point numbers. The speed depends on which of two ways floating-point arithmetic is done. Some machines have special hardware, often supplied only as an optional extra. Software routines can be written to achieve the same results, albeit more slowly, since dozens or hundreds of instructions must be executed. The 8088 microprocessor in the IBM PC has a floating-point extension available (the 8087 coprocessor), and one company has just made this available on a separate board. In conclusion, some 16-bit machines can have quite a respectable number-crunching capability.

Phil Mayes
Santa Barbara, California

A Tall Order

We at Tall Tree Systems appreciate *PC* magazine and are frequent advertisers. The directory issue (*PC*, September 1982) is great and will most likely be used as a reference tool for a long time. It was a disappointment to us, however, that the information was edited and that our telephone number was misprinted. I am referring to entry number 27, JRAM. The correct phone number should be (415)941-5500.

Tall Tree Systems
Los Altos, California

Improving With Age

I believe your magazine has a good blend of advertising and articles. Some of the earlier articles were not technically correct, however. For example there is no such thing as a 32/70 mainframe (see "Boca Diary," *PC*, April/May 1982); the 3270 is a family of IBM terminals. But you are getting better all the time. In all, *PC* is a must for anyone who uses, owns, or is interested in the IBM PC.

Robert W. Paterson
Lexington, Kentucky

Addressing the Issue

I am interested in finding out more about the 16x80 LCD display mentioned by Jean Yates and Dr. Rebecca Thomas in "The Visi-calculator Dream Machine" (*PC*, August 1982). The article mentioned Sunnyvale as the location of the manufacturer, but the listings in Sunnyvale are all residences. Please give me the correct phone number and address.

Creative Resources in Technology
Renton, Washington

Contact Cockcroft International at P.O. Box 4924, Foster City, CA 94404, (415)345-1940.—Ed.

Correction

In the September interview with Marty Alpert, "Tecmar's Triumph: A Decade of Success" (*PC*, September 1982), we mistakenly quoted Alpert as predicting that 3¼ to 3½ million IBM PCs would be in the field by the end of 1983. His actual prediction was between ¾ million to 1½ million IBM PCs.

Pascal People

I know that IBM is offering a Pascal compiler that requires 128K and two disk drives, and I have seen advertisements for the UCSD p-System with Pascal. This p-System compiler also requires two disk drives, but the minimum memory requirement is only 64K. Can you explain the difference between these two options? What exactly is the UCSD p-System, and is there any advantage to a 64K system?

Lance Wolf
Allendale, New Jersey

Your wish is our command. Last month's PC (October 1982) featured an extensive review of the UCSD p-System by Tom Woteki and Alan Freiden. By now you should have received your copy and found everything you need.—Ed.

Which DOS?

I have noticed that when you mention DOS in various articles, you neglect to specify the version. Now that there are two versions of the IBM operating system, it would be very helpful to the reader if you would specify whenever possible.

John Thomas, Jr.
New Vernon, New Jersey

Our policy has been to use the most updated software in our reviews unless otherwise specified. We will try to be more specific in the future.—Ed.

Wish List

I wish there were some way to respond to your *Wish List* column. In the September 1982 *Wish List*, Lee Middleman wished for exactly what my company sells. *Pro-Key* from ProSoft not only fulfills Middleman's wish by enabling users to define special function keys, it allows the user to define tedious or difficult input sequences so that they can be played back over and over with minimal effort. It attaches to DOS and works magic for most programs (especially *VisiCalc* and *WordStar*).

David Rose
Seattle, Washington

PC welcomes letters from readers. Write to: Letters, PC, 1528 Irving St., San Francisco, CA 94122. Letters may also be sent electronically through The Source: ST0948, or CompuServe: 70300,532.

at work or at home...





TEXTRA™

IS THE FASTEST, EASIEST WAY TO ENTER TEXT INTO YOUR PC

FINALLY! With its advent into the microcomputer market, IBM has produced a machine with more advanced features than any of its predecessors. Now, TEXTRA, the new full screen editor from Ann Arbor Software Associates, harnesses this power, making it remarkably easy to enter text into your PC.

POWERFUL. . . With copy, move and replace commands, sweeping changes can be made to your programs in seconds. A rich set of cursor movers and a flexible search command, along with user defined labels, makes movement through your text a breeze!

FULL FEATURED. . . Document preparation is a snap, with features like: Word wrap—User defined margins—Auto indent—Line shifting—Line centering. And any part of a separate file can be merged with a few simple keystrokes.

AND FRIENDLY. . . From the very first time you use TEXTRA, the helpful prompts will guide you quickly and efficiently through your editing sessions. Documentation includes a full tutorial as well as a thorough user's manual.

EXCEPTIONALLY PRICED AT ONLY $70

P.O. BOX 7345
ANN ARBOR, MI 48107
(313) 769-9088

AASA
ANN ARBOR SOFTWARE ASSOCIATES

Dealer inquiries welcome. Requires monochrome display, PC DOS and 64K. Michigan residents add 4% sales tax.

TEXTRA– A Text Editor Plus!

BUY SOME TIME FOR $169

Time is money. You have a computer system because you know that it saves you money by simplifying procedures and reducing time normally involved in your work. Time is an important resource which should not be wasted. You are wasting valuable time if you ever wait for your printer.

No waiting. Now with Microfazer by Quadram there is no more waiting.

Microfazers are inexpensive universal printer buffers which any computer user cannot afford to be without. Any computer—any printer (or plotter!), whether parallel or serial. Microfazer receives information from the computer at ultra high speeds causing the computer to think the printer is printing just as fast as the computer can send. Microfazer holds the information until your printer can handle it, and then sends it on.

More copies. Microfazer is equipped with a copy feature allowing additional copies of the buffered information—from one to as many as you want—with the mere press of a button. When you need your information repeated, for whatever reason, it's always right there—inside Microfazer.

Microfazer™ stack. Microfazer can be stacked with popular modems or other peripherals. Some models can plug directly onto the back of your printer. Install it in less than 60 seconds, and choose the amount of buffer memory you need—8K, 16K, 32K, or 64K. One model even comes with up to 512K! You may use several Microfazers in series to create just what's right for you. Take data in from a serial computer and out to a parallel printer. Or in from a parallel computer and out to a serial printer. Microfazer is just as flexible as you need it to be.

Low price. Only $169 for 8K of buffering, $189 (16K), $225 (32K) and $299 for a full 64K. Serial-to-Parallel, Parallel-to-Serial and Serial-to-Serial models have slightly higher prices.

QUADRAM CORPORATION

4357 Park Drive / Norcross, Ga. 30093
(404) 923-6666



Special ... the ... Epson printer

DAVID BUNNELL

Tracing My Word Processing Roots



Getting my first word processor was a big event. From that day forth the torture of retyping draft after draft was over. Minimizing the nerve-racking hum of my electric typewriter was an added bonus.

As one remembers a favorite car from the past, I fondly recall that my first word processor was built around one of the better so-called S-100 bus machines, the Sol, by Processor Technology. It had a great keyboard with lots of function keys and was packaged in a sky blue, metal box with real wood panels. Designed by Lee Felsenstein, who later designed the Osborne portable computer, the Sol was a pleasure to work with.

Unlike the Sol, however, the rest of my system was sadly rudimentary. Not having the funds for a disk drive, I used a cassette recorder to store programs and files. Loading a program took about 5 minutes when it loaded correctly, which was approximately one time out of three.

The word processing program I used was crude, but adequate for my needs. It was slipped to me by a friend at GRT Corporation, a company that, like Processor Technology and host of others, has since gone belly up. Because the program was most likely pirated, I had no documentation. Learning to use it was a matter of trial and error, a task performed by my friend Jim Edlin, who has a great deal more patience than I have. I loaned him my system for a few days and he came back with a list of commands. But these problems were minor compared to my biggest handicap —I had no printer nor the resources to acquire one.

But even sans printer, this system still presented a quantum leap over my electric typewriter. I wrote and edited letters, articles, and book chapters on the screen. Once they were as perfect as I could make them, I typed the final copy from the screen. By this means I was liberated from retyping draft copies and was free to make all the editing changes my little heart desired.

DESPITE system crashes that wiped out whole files, I felt a sense of liberation.

Despite occasional system crashes that wiped out whole files, and my frustration with awkward editing commands, I felt a sense of liberation. No matter how many times I fiddled around with the words in a sentence or how many misspellings I found, I wasn't punished for correcting errors or experimenting.

The fruits of this liberation showed up quickly as my then struggling career as a free-lance technical writer began to pick up. Using my Sol, I could turn jobs around much faster. This gave me more time to hustle new contracts. I also had more time for sitting in the jacuzzi.

But the real payoff came when Jim Edlin and I used the Sol in tandem with Jim's Selectric typewriter to collaborate on a book proposal that not only brought in a sizable advance, but also yielded a donation of three micros, three modems, and an excellent letter quality printer. True liberation was just around the corner, or so it seemed.

Our micros, Compucolor II's, arrived 6 months after their promised delivery, and our printer came shortly thereafter. This turned out to be the beginning of a period of my life that was dominated by software/hardware headaches of migraine proportion.

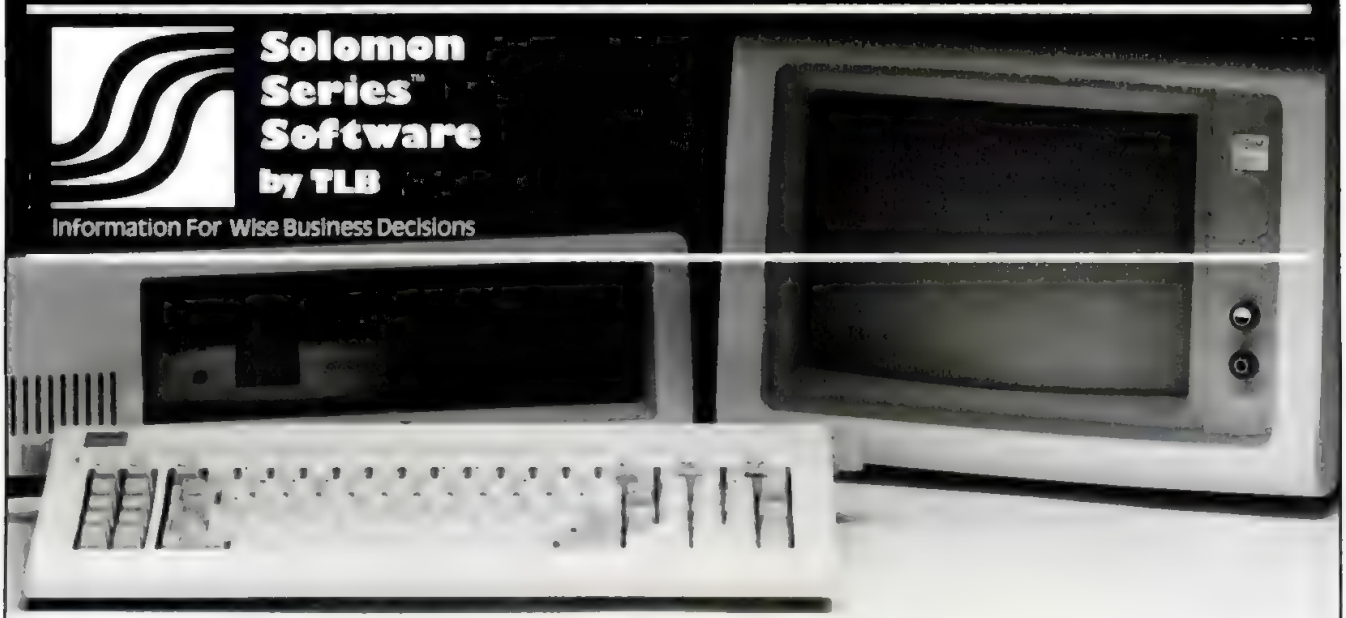
For openers, our Compucolors had a funny habit of literally blowing up. Everything would seem to be functioning fine when suddenly a loud bang wold be followed by a cloud of smoke coming out of the monitor. This was discouraging. Worse yet, the nearest repair facility was 60 miles away and frequently couldn't get to our problems for a week to 10 days. It turned out that neither our micros nor our word processing program worked with our printer.

After writing our own printer interface and making numerous trips to the repair facility, we finally got our system running. By that time, however, the book project was hopelessly behind. From the Compucolor II, I graduated to a Wang office system with a feature called "Super Copy" that allowed for high-speed transfer or copying of selected text from one file to another. I also put in many hours on the Xerox 860, which features full-page display.

These days I use my hard-disk-equipped PC with a variety of word processors. I like and hate all of them equally. ***/PC***

Solomon Series™ Software by TLB

Information For Wise Business Decisions



now SOLOMON

Accounting Software is available for your IBM Personal Computer®

Solomon offers the most sophisticated accounting software system for microcomputers.

Easily set up, the remarkable Solomon software package operates from a single database managed by the MDBS™ database management system utilizing the industry standard operating system—CP/M™.

Solomon is faster, more powerful, more flexible, easier to install and easier to use than other systems.

The Solomon I System handles general ledger, payroll, accounts payable and receivable, invoicing, fixed assets, cash receipts and disbursements and address list maintenance.

The Solomon II System includes all these functions plus a job management package that can be used by engineers, architects, consultants, contractors and other service businesses.

Now you can have instant information for wise business decisions—with Solomon Series Software by TLB—from Computech.

Hardware requirements:
- 64K RAM
- Baby Blue™ CPU Card
- 132 Column Printer
- Hard Disk Recommended

IBM Personal Computer is a registered trademark of IBM.
MDBS is a registered trademark of Micro Data Base Systems, Inc.
CP/M is a registered trademark of Digital Research.
Baby Blue is a registered trademark of Xedex.

For your nearest authorized dealer write or call.

COMPUTECH

COMPUTECH GROUP INCORPORATED
Main Line Industrial Park
Lee Boulevard
Frazer, PA 19355
215-644-3344

ZERO BASE THINKING/JIM EDLIN

Plug In, Dial Up, Or Lose Out

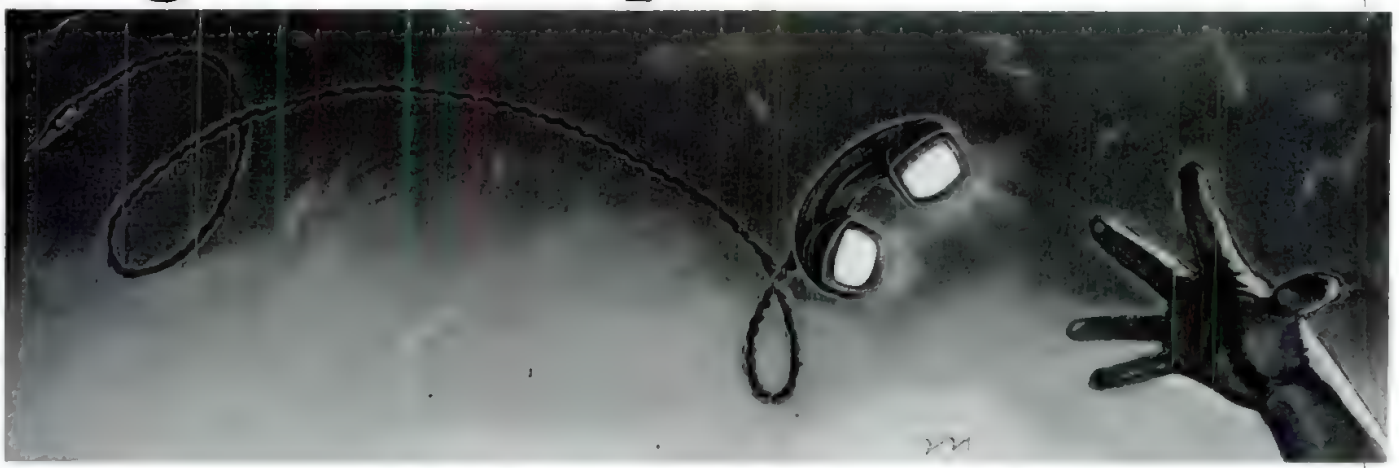


Illustration: Mick Wiggins

Personal computers seem headed toward becoming this decade's mind-expanding agent. But first we have to heed the above revisionist version of Timothy Leary's famous '60s call to inaction. The true mind-expanding potential of personal computers will not emerge until they can communicate.

The shame of the personal computer industry is its criminal neglect of communications. IBM should be embarrassed that its customers must turn to third parties if they want their PCs to hook up to the rest of the world. And its many partners in negligence, from Apple to Xerox, are also missing the boat.

Ideally every personal computer should roll off the assembly line, ready to be plugged into a standard phone jack so it can exchange messages with its peers. If all the manufacturers made that commitment, the added cost to each machine would quickly become marginal. But since the manufacturers are not committing themselves, I am urging you—personal computer buyers and owners—to take the step on your own.

This column is always advising you to go out and spend your hard-earned money. A while ago I urged you to make the investment in a color-capable PC system to encourage the development of powerful, color-exploiting programs. Now I'm back with more of the same—this time suggesting that you consider your system incomplete unless it has at least elementary telecommunications abilities.

Viewed against minimum PC systems, such abilities may require additional expenses. But for those whose IBM PC system is a more typical workhorse configuration, the necessary additions for communication should bump the price by no more than 10 or 12 percent. The added usefulness, however, should soar to double or more before your first year is out.

THE TRUE MIND-expanding potential of personal computers will not emerge until they can communicate.

Your PC can be equipped for basic telecommunications with just four items: a telephone connection device (modem), an adapter to tie it to your PC (serial interface), a cable to connect the first two items, and a program that lets you put them all to work. Shop carefully and you can find the whole lot for $200 or less. Double your investment and you will get a modem capable of answering the phone without assistance and dialing phone numbers under computer control. (Both are useful for electronic mail.)

Telecommunicating personal computusefulness observed in ordinary telephones: The greater the number of people who have them, the more useful each one becomes. When you get the necessary hardware and software, you're not only adding to the usefulness of your own system, you're also adding to everyone else's.

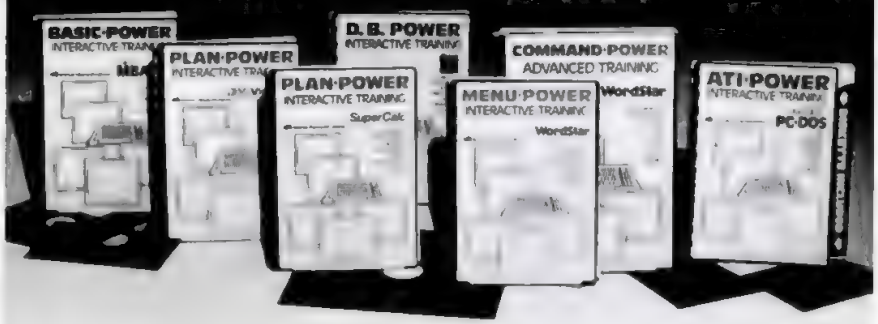
Don't let all the fuss about high-tech communications strategies confuse or delay you. Go for the bird-in-hand; don't hesitate to plug into proven technology while other alternatives sort themselves out. This refers specifically to the so-called "local networks."

What makes systems "local networks"? What makes them "networks"? Draw six dots in a circle on a piece of scratch paper. Draw lines among them so that each dot is connected by a single line to every other dot. The resulting figure should look like a net. Thus, "network." A network is the original and simplest method of establishing connection channels among several points. Other major strategies accomplish the same thing; visualized on paper, they would look nothing like a net, but the term survives from that early image.

What makes a network "local"? Today's technological limitations, that's what! The performance we desire today from a connection between computers—chiefly, fast response and high capacity—can be achieved with relative ease across short distances. These same qualities would be desirable in a universal network, but we don't know how to achieve them practically or affordably at that scale. So we accomplish them at the scale we are capable of and call it a local network.

To my mind, local networks are a dis-

Training so advanced ... it makes software simple!



Insert ATI's training disk into your IBM microcomputer — and in one hour — you'll be using your software like a pro!

With ATI's Interactive Training disk — you work interactively with your computer as it guides you through a series of simple, step-by-step, plain-English practice sessions. Handy reference guide included.

Save your valuable time! Build software skills fast! Order an ATI Interactive Training Program to match your software today, from ATI's leading dealer, SOFTWARE TRAINING COMPANY.

PLAN-POWER for VisiCalc (IBM)
PLAN-POWER for SuperCalc (IBM)
With PLAN-POWER VisiCalc or SuperCalc you'll learn financial planning functions like create, modify, manipulate, save, retrieve, label and print. You'll arrange and calculate complex mathematical data faster and easier than you ever thought you could. **$75.00 Each.**

ATI-POWER for IBM-DOS
With ATI-POWER PC-DOS you'll learn how to use 12 of the most common PC-DOS commands in less than one hour! You'll be able to display the directory, copy files and disks, rename files, and much more. You'll also be able to prepare, monitor, maintain, even troubleshoot your own system — like a pro! **$75.00**

D.B. POWER for dBASE II (IBM)
With D.B. POWER you'll be able to create a data base, enter data, sort data, add, modify, change, and edit important data to generate comprehensive reports — even develop mailing lists — in less than one hour! **$75.00**

BASIC-POWER for MBASIC (IBM)
With BASIC-POWER you'll be able to develop business applications programs that really work. You'll be able to write, enter, debug and use programs that analyze business expenses or organize mailing lists in less than two hours! **$75.00**

POWER PACK for WordStar (IBM)
MENU-POWER Interactive Training helps you create documents, edit with insert, delete and strike over, and print documents. In less that 45 minutes, you'll be able to use the WordStar menus to perform powerful word processing operations.
ATI's COMMAND-POWER Advanced Training is a powerful instructional document that teaches you to be a WordStar expert in only a few hours. You'll be able to create, revise, format, and print—even professional looking reports—by using advanced WordStar operations such as: cursor movement, block operations, search and replace, format control and more. **$75.00**

SUPERIOR TRAINING
SOFTWARE TRAINING COMPANY offers the best software training available. We carry products by American Training International — ATI is the leader in microcomputer training. ATI's staff has developed training programs for industry leaders like Digital Research, IBM, Xerox, NEC and Toshiba.

SOFTWARE TRAINING COMPANY
RUSH ORDER NUMBER
VISA **(213) 306-7015** MasterCard

Dealer, distributor inquiries referred to
ATI, 3800 Highland Ave., Suite 400, Manhattan Beach, CA 90266. 213-546-4725

ATI MONEY BACK GUARANTEE
If you're not completely satisfied with how fast you can learn by using our ATI Interactive Training Program, simply return it within three days for a full purchase refund.

☐ PLAN-POWER for VisiCalc ☐ D.B. POWER for dBASE II
☐ PLAN-POWER for SuperCalc ☐ BASIC-POWER for MBASIC
☐ ATI-POWER for IBM PC-DOS ☐ POWER PACK for WordStar

Enclosed is $75.00 each, plus $2.50 shipping (CA add 6½%)

Name _____ Phone _____ Date _____

Street _____ City _____ State _____ Zip _____

Mail to: SOFTWARE TRAINING COMPANY, Sales
3800 Highland Ave., Suite 300, Manhattan Beach, CA 90266

WordStar is a trademark of Micropro. D.B. POWER, ATI-POWER, PLAN-POWER, BASIC POWER, MENU-POWER and COMMAND-POWER are trademarks of American Training International. dBASE is a trademark of Ashton-Tate. SuperCalc is a trademark of Sorcim. MBASIC is a trademark of MicroSoft. VisiCalc is a trademark of VisiCorp. IBM PC-DOS is a trademark of International Business Machines.

traction. Widespread communication with adequate performance is better than narrowly restricted communication and super-zowie performance (though if you can afford and justify both, then by all means you should have both).

If your phone is too slow, high-speed exchange of data files can be done within your office by taking a diskette from your computer to another down the hall. But slow telecommunications will seem wonderfully fast when it allows you to review a contract draft 10 minutes after it has been written by an attorney 2,000 miles away.

Miracles are not necessary for the exchange of information with clients, customers, suppliers, prospects, attorneys, accountants, or editors across town or across the country. File transfer programs are available that will let you communicate with different brands of computers using programs other than the ones you have.

Sometimes simple tricks can overcome communications barriers. Most word processing programs can be set to print to the modem as if it were a printer, and a program on the other end of the connection can treat the incoming data as if there were a person at the sending end typing at a keyboard.

With today's products you may have to educate yourself slightly on such niceties as baud rates and stop bits to enjoy the maximum range of communications opportunities. But when you want a prospect to see your proposal immediately, that capability may seem worth the effort.

As long as you get a modem of the originate-and-answer type (highly recommended), you won't need to subscribe to any commercial communications service other than your local phone company, though several offer helpful facilities, such as formalized structures for electronic mail. (If you do sign up for one of these services, make sure you let the world know by including your network address on your business cards and letterheads, and then check the service periodically to see if anyone has taken up your implied invitation.)

Personal computers can do for our left brains what hallucinogens were purported to do for our right brains. But if we don't equip our PCs so they can plug into the phone system and dial up their electronic peers, we will lose out on much of what they have to offer. */PC*



The DSI-501 Disk Drive fits into **the 2nd slot** on your IBM Personal Computer, **to give you 5 MB** formatted (6MB **unformatted**) storage for $1995. The **DSI-512 provides 10 MB formatted** (12 MB **unformatted**) storage for just $2495. And the DSI-519 **provides 15 MB formatted** (19 unformatted) for $2995. Compatible with IBM software.

$1995.* PLUG IN HARD DISK FOR THE IBM® PERSONAL COMPUTER.

One low price buys you the expanded storage, speed and reliability of a Winchester technology hard disk system. The DSI-501, DSI-512 and DSI-519 support IBM DOS.® Full software support includes an installation program and complete diagnostics.

The DSI-ASYNC+ RAM provides 64K RAM, expandable to 256K with parity, and 2 serial I/O ports on one card. Select the option and save space as well as dollars. The price of $495* includes extensive software for flexibility.

More low-priced expansion options. Our wide selection lets you mix and match products to fit your needs and your pocketbook.

Choose the DSI-64K, DSI-192K, or the DSI-256K fixed RAM cards with parity. For powerful upgrades, select the DSI-EX64K—a 64K RAM card that easily expands to up to 256K with the addition of individual memory chips. Prices start at $299*. Also available is the DSI-ASYNC, a dual port serial I/O card priced at $199*.

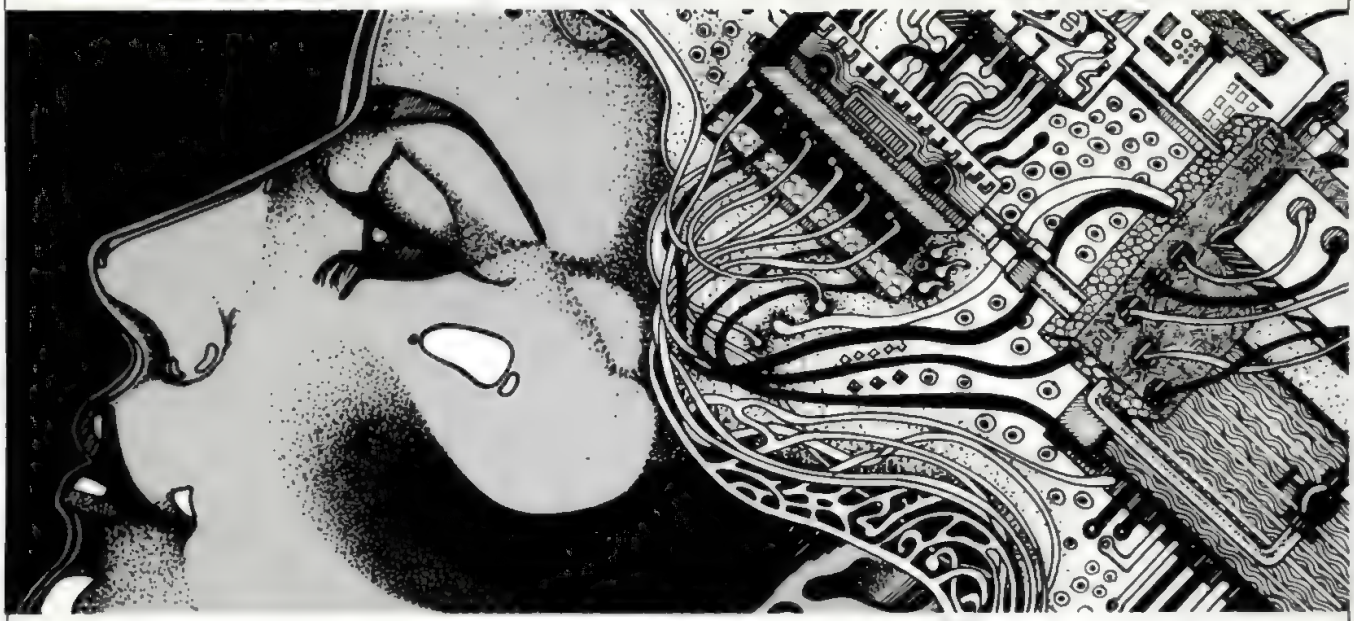
Expand your IBM Personal Computer for a lot less money. Take this ad to your local computer retailer and ask for products by Davong.

DAVONG Systems, Inc.

1061 Terra Bella Avenue
Mountain View, CA 94043
(415) 965-7130

* **Manufacturer's suggested retail price. Includes all required components.**
IBM Personal Computer and IBM DOS are registered trademarks of IBM Corporation.

THINK DIGITAL MARKETING. THINK AHEAD.



FOOTNOTE™

AN ESSENTIAL PROGRAM FOR THE SERIOUS WORDSTAR™ USER.

FOOTNOTE brings full footnoting capability to WordStar:

- Automatically **NUMBERS** both footnote calls and footnotes.[1]
- Automatically **FORMATS** text and footnotes, placing footnotes on the bottom of the correct page.[2]

Easy to USE:

- While in WordStar, type a symbol[3] for each footnote and enter the text of the footnotes **anywhere** in the file.[4]
- After saving the WordStar file, run **FOOTNOTE**. The result is a fully formatted and fully editable WordStar file.[5]

[1]The numbers can be superscripted or non-superscripted, at the user's option.

[2]At the user's option, the footnotes can also be removed from the text file to a separate note file.

[3]The default symbol "@" can be changed to any other symbol.

[4]Footnotes can be entered singly or in groups. They may be entered in the middle or at the end of paragraphs, or in a completely separate note file.

[5]The user can modify, add, or delete text and notes and run **FOOTNOTE** again to re-number and reformat the edited file.

PAIR™

WordStar users who **underline** phrases, or set them in **boldface**, often discover only too late — when the printer suddenly slows down — that they forgot to end the special print command. **PAIR** checks that print commands are properly terminated, and marks all errors in the text for easy correction.

FOOTNOTE and PAIR require 48K RAM and CP/M 2.x, CP/M-86 or IBM PC DOS, and WordStar. Formats: 8" SS/SD, 5¼ NorthStar DD, Micropolis Mod II/Vector MZ, Superbrain 3.0, Apple II with CP/M, 5¼" and 8" Xerox 820, HP-125, HP-87, Televideo, IBM PC (specify DOS or CP/M-86), IBM DisplayWriter with CP/M-86.

FOOTNOTE AND PAIR ON ONE DISK — $125.

FOOTNOTE and PAIR trademarks PRO/TEM Software, Inc. WordStar trademark MicroPro Int'l. CP/M and CP/M-86 trademarks of Digital Research.

A PRODUCT OF

PRO/TEM

We accept MasterCard, VISA, American Express.

SOFTWARE
SOFTWARE
DIGITAL MARKETING
DIGITAL MARKETING™



DIGITAL MARKETING CORPORATION

2670 CHERRY LANE • WALNUT CREEK • CALIFORNIA • 94596
(415) 938-2880 • Telex 17-1852 (DIGMKTG WNCK)

Dealer inquiries invited. Dealers outside California call (501) 442-0868. Inside California call (415) 938-2883.

P-Communiques

A compendium of facts, news, inside intelligence, opinions, gossip, speculation, and forecasts about IBM Personal Computers and related matters.



Charlie Chaplin Joins the Ad Wars

IBM has him perched on a ladder next to a gigantic floppy disk, inviting program authors to send in their software. PC put him on its cover. And now NEC has him—complete with bowler and moth-eaten gloves—daintily dabbing tears as he contemplates the Japanese firm's new Advanced Personal Computer.

The charming silent film character that Chaplin created has always held a secure place in American culture, and it appears that he has entered the domain of advertising as well. In a campaign reminiscent of Avis going after Hertz a few years ago, NEC boldly proclaims that its new computer "gives Charlie the blues."

Software May Be Added to Copyright Law

Although computer programs are generally published with the standard copyright notice in their manuals and on-screen identification, software is not specifically mentioned in federal copyright law. A new bill by Representative Robert W. Kastenmeier, a Wisconsin Democrat, would change that by adding computer programs to the list of items spelled out for protection by that law. Unfortunately, this bill was introduced late in the congressional session, and there is little chance of its passage by both the Senate and the House before Congress adjourns in October.

FORTRAN Bugs

FORTRAN users should be aware that there are problems with the compiler being published by IBM and operating under PC-DOS. Dealers should be able to provide documentation covering the problems, along with patches and other hints to avoid trouble. One problem area is this: Programs that utilize more than 256K of memory seem to be particularly susceptible to Error 1268 (dynamic file allocation limit exceeded). When the size of the data area is reduced to allow the entire program to fit within 256K, the problem goes away.





Illustration Stuart Bradford

New Supplier Assembles PCs

In an agreement announced late this summer, SCI Systems Inc. of Huntsville, Alabama was awarded a contract to assemble the electronics for the IBM PC. The PC assembly work by SCI began in July (concurrently with the beginning of that firm's new fiscal year), with full production expected by December. The $158 million contract calls for SCI to assemble the PC's internal electronics through the end of 1983. The Alabama firm is using its new $5 million plant for this operation.

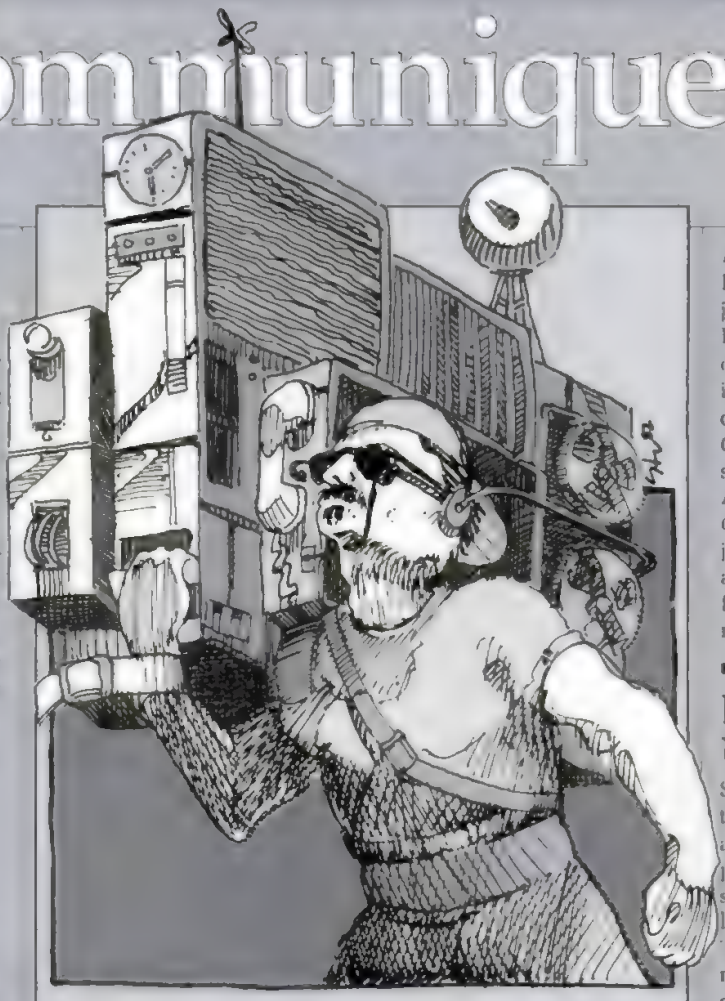
In addition to its electronic assembly work for IBM, SCI recently signed a contract to produce the Lexicon Lex-31 Personal Communications Computer for Lexicon Corporation of Fort Lauderdale, Florida. Many of SCI's projects involve defense work, such as a recent Air Force contract to produce airborne test range instruments. The firm also manufactures control and alarm equipment for the petrochemical industry, currency-handling devices for banks, and electronic products for the health care industry.

Department of Mirth

In our continuing effort to add a light touch to the PC world and computing in general, P-Communiques is initiating a Department of Mirth. We encourage readers to submit jokes, amusing anecdotes, and other entertaining items of interest to PC users. We'll pay a modest fee for each contribution we use. We'll start the cursor moving, so to speak: What did one computer say to the other? "I've got a crash on you!" Or, "This baud's for you."

Yes, we're sure you can do better than that—please send your gems to P-Communiques.

P-Communiques



EasyWriter Swap to Expire

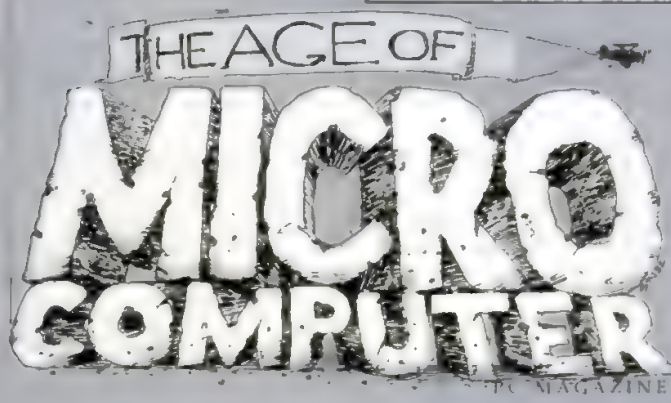
As many PC users know, IBM has released a revised version of the *EasyWriter* word processing program, labeled *EasyWriter 1.1*. If you bought the original version of *EasyWriter*, labeled 1.0, you may obtain the new release at no charge by taking the first page of the *EasyWriter* manual (it's lavender, with 6172310 to the bottom left) to your authorized PC dealer. But you must make this exchange by December 31st of this year to get the new release for free.

Computer Literacy Test

ComputerTown USA!, a microcomputer literacy project sponsored by the People's Computer Company of Menlo Park, California, is accepting proposals from individuals and organizations that would like to become an official test site for the project. The site chosen must be located in the United States, east of the Mississippi River. Applications and further information about ComputerTown USA! are available from ComputerTown, P.O. Box E, Menlo Park, CA 94025, (415) 323-3111. The deadline for applications is December 1st.

Infotainment?

Future shock has come and gone, and media shock is setting in. At least that's the way a prediction for technology circa 1990 makes us feel. Strategic Inc., a market research firm in San Jose, California, recently released a report that promised an all-in-one "home infotainment center" as the ultimate in electronic comforts. This rather incredible cluster of devices would include a large-screen television, stereo receiver and turntable, connections for speakers and audio and video cassettes, and a videodisc player, not to mention a built-in telephone, clock, and synthesizer. Oh, and more connections for disk drives, a hard disk, and—phew!—an expansion bus that's compatible with the PC. Frankly, we're waiting until it's portable.



1982: Year of the Micro

This year may mark the coming of the age of microcomputers in popular media. Personal computers have received cover-story treatment from no less than four major magazines in 1982—*Newsweek*, *Time*, *Forbes*, and *Changing Times*. In a move that demonstrates just how completely micros have permeated public consciousness, *Time* inaugurated its first new department in many years—*Computers*—with a cover story on kids and computers. And the highly respected *Consumer Reports* has also joined the computer ranks by announcing that it has formed a task force to test microcomputers.

Diagnostics Update

Several readers have written to tell us that IBM has issued an update of the Diagnostics program, the updated disk was sent to all "designated service locations" earlier this year. The "Keyboard Error 301" message that was displayed on some users' screens during a diagnostics test with the original version of the program was caused by a timing problem between the diagnostics software and the keyboard hardware. Consult your dealer for details about the corrected diagnostics program.

Writing to Read

If you feel dated because you don't know who Ms. PacMan is or have trouble relating to your teenager who has begun calling earth another galaxia station, then wait till your kindergartener comes home with a computer printout of his or her Christmas list. IBM's 1982 budget includes a plan to give about 10,000 kindergarten and first grade students the chance to use some 300 IBM PCs to introduce reading and writing fundamentals.

> ***"In some sense, all companies in the computer industry are orchids on IBM's tree. Everyone has to consider IBM's pricing and strive for compatibility with IBM equipment."***
>
> —Tracy Kidder
> The Soul of a New Machine

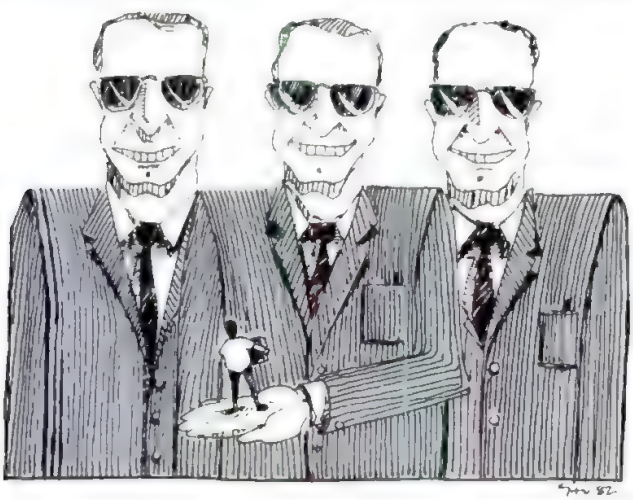


IBM Issues "User Updates"

As of July the IBM Personal Computer division began publishing and distributing "User Updates" to authorized PC dealers. July's 1-page offering announces this new bulletin's intentions and provides a few specific hints; August's eight pages of updates offer further tips on hardware and software use and clarification or correction of items published in manuals. Each of these documents is labeled clearly at the bottom, "Future *User Updates* are available at your authorized IBM Personal Computer dealer," implying that users should be able to obtain copies from a dealer or at least study the dealer's set and take notes.

Following are some tips from the *User Updates*:

- If you use a television as a display for the PC and are getting disk read errors, move the TV at least 12 inches away from the PC System Unit. The television might be emitting signals that are picked up in the disk read circuitry, causing errors in data transfer.
- If you use one display adapter card, IBM recommends that it be installed in Slot 2 of the PC. If you use both a color/graphics adapter and the monochrome adapter, be sure that the color/graphics card is in Slot 2. (The other adapter card should go in Slot 3.) The color/graphics card is about ½ inch taller than other PC cards, and Slot 2 is the only advisable location for it. Placing this card in Slot 3 could cause excessive pressure on the card itself and on a ROM package below it.



Big Isn't All Bad

"In this day of distrust of large institutions, I'd like to report that I have received courteous and efficient help from Big Blue. A problem cropped up during the first 30 days I had my PC, and a control number was assigned to me by the people at the 800 help number. I was unable to get the machine off some important projects until 3 months later, but the Los Angeles service center handled a system board replacement with speed and efficiency.

"Shortly after my machine was returned, the 'Parity Check 1' gremlin popped up, and within 2 days IBM had once again replaced the system board. (It seems that heat buildup exposes the problem.) I pass this along to affirm that IBM is keeping up its standards of service."

W. Terry Van Hook
Bellflower, CA

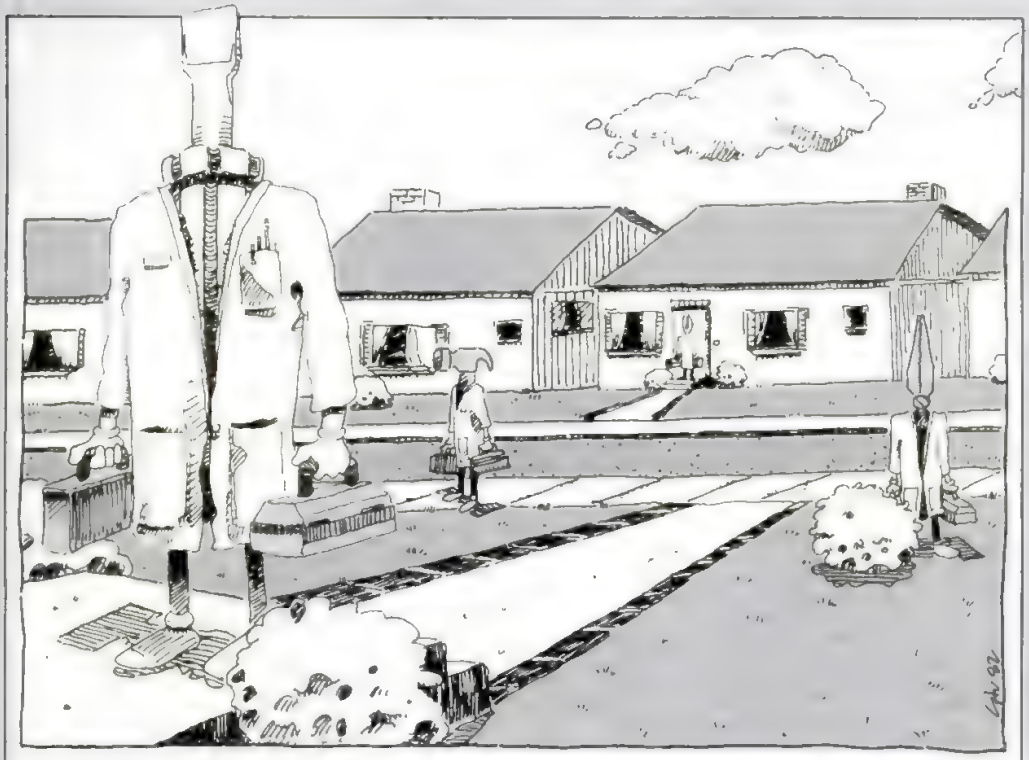
Dow Jones Enters the Software Fray

First the *Wall Street Journal* and *Barron's*, then the Dow Jones News/Retrieval electronic data base service, and now Dow Jones software. In October Dow Jones announced the first four products in its new venture into the software market. All are designed to take advantage of the existing Dow Jones News/Retrieval, the extensive electronic news and financial service that is the subject of an article in this issue of PC.

The four Dow Jones software packages are: *Market Analyzer*, a technical analysis product designed to collect, store, and update financial information; *Market Microscope*, a fundamental analysis product that provides users with the ability to set buy and sell points and other parameters; *Market Manager*, a portfolio management product that provides an accounting and control system for financial holdings; and *Connector*, a communications package designed to link microcomputers with other computers, including the Dow Jones News/Retrieval and other data bases. Two of these packages, *Market Analyzer* and *Connector*, are ready now; the others are expected late this year.

Now for the bad news. At present, Dow Jones software is available on only Apple II and Apple III computers. The folks at Dow Jones are reluctant to promise any dates for the software's availability to PC users, but the firm is expected to implement the products on the PC, probably early in 1983.

P-Communiques



Computer Mechanics Multiply

With microcomputers becoming a household fixture, can the repair technicians be far behind? No, according to International Resource Development, a research firm in Norwalk, Connecticut. This firm's recent study predicts that the major service companies, which now do an annual $500 million business repairing big computer systems, will soon set up carry-in service centers for personal computer owners. Within 10 years, the researchers promise, computer repair will be a $3 billion business.

More Adventures of the Intel 8087

In the August issue (*P-Communiques* and *New on the Market*) we reported the availability of the Intel 8087 mathematics processing chip for the PC. The firm that offered the chip, Sun Coast Data Sciences of Costa Mesa, California, is no longer operating. (Because of a typographical error, we called that firm South Coast Data Sciences in one place; there is no company by that name.)

PC users are not without a source for the 8087 number-cruncher, however. MicroWare, P.O. Box 79, Kingston, MA 02364, (617) 746-7341, sells the 8087 chip as part of a combination that includes installation instructions, a book entitled *The 8087 Guide*, and a choice of one of MicroWare's software packages. These packages include *87MACRO*, a library of assembly language macros that work with the IBM MACRO Assembler; *87BASIC*, a library of drivers that work with the BASIC Compiler; *87PASCAL*, a library of drivers that work with the Pascal Compiler; and *87FORTRAN*, a library of drivers that work with the FORTRAN Compiler. The chip-and-software combination sells for $375, and the individual software packages sell for $125 to $150.

MicroWare President Ann Fried emphasizes that the 8087 chip can be installed as an individual unit and does not have to be paired with a new 8088 chip. Thus users do not have to replace the 8088 processor that is already installed in the PC in order to utilize the 8087 chip from MicroWare.

Home Computers Find a Home

A group of computer enthusiasts has founded the International Home Computer Users Association (ICA), an independent, nonprofit organization open to individuals and user groups. The following are among the services announced by ICA: biweekly bulletins of news and computing tips; a monthly newsletter; a library of hardware and software reviews and newsletters from other user groups; a "start-up kit" for people who want to start a user group; a speakers' bureau; and special assistance with programming and consumer issues.

The International Home Computer Users Association is located in the San Diego area but expects to coordinate activities nationally and internationally. For information write to P.O. Box 371, Rancho Santa Fe, CA 92067.

P-Communiques Pays

Do you have news, gossip, or unusual computer tales for P-Communiques? We will pay up to $50 for each submission used. You must include your name, address, and telephone number with the item. We will preserve your anonymity if you wish. All submissions become the property of *PC* and are subject to editing. Our *User-to-User* section also publishes and pays for readers' submissions; that section features tips, problem solutions, and short programs or routines. Please address submissions to *P-Communiques* or *User-to-User—PC*, 1528 Irving St., San Francisco, CA 94122.

This is what the pros have said about Perfect Writer:™

"Perfect Writer lives up to its name . . . It would be my choice for a word processor in my home."

John Ford, Infoworld

"The company is stamping a giant footprint in the market with an aggressive advertising campaign—and with a program that delivers what the ads promise . . . Perfect Writer will likely be the tool I use to construct future documents."

Dona Z. Meilach, Interface Age

"It does things I've seen nowhere else."

James Fallows, Atlantic Monthly

"Capabilities like those in Wangwriter and other sophisticated systems."

Softalk

Perfect Software™

The revolution in software.

The Perfect Software team is available for: Apple with CPM, HP-125 and HP-87, Heath/Zenith, IBM PC, North Star, Osborne, Sharp, Superbrain, Televideo, TRS Model 2 and 16, Vector, Xerox 820 and most 5¼ and 8" CPM and MSDOS.

MICROHOUSE HAS JUST BECOME A MAJOR PERFECT DEALER/DISTRIBUTOR.

*As of September 30, 1982.
Scheduled release November, 1982.

For the dealer nearest you call

800-227-5488

(in California 415-644-3001)

**1400 Shattuck Ave.
Berkeley, CA 94709**

DEALER INQUIRIES INVITED

Perfect Writer, Perfect Speller, Perfect Filer, Perfect Calc and Perfect Software are trademarks of Perfect Software, Inc
CP/M is a trademark of Digital Research
MS is a trademark of MicroSoft Corp

Go For The Gold



DOW JONES NEWS/RETRIEVAL®...Now On The IBM PC
The Standard Of Excellence In Electronic Information.

Every four years, athletes set their sights on the "gold." Every day, millions of people set their sights on another standard of excellence—information from Dow Jones, the world's leading provider of business and financial news.

Now, through **Dow Jones News/Retrieval®**, the publishers of The Wall Street Journal offer owners of the IBM Personal Computer instant, electronic access to this same standard of information excellence. With the Dow Jones™ Reporter, developed by IBM, you can call up reliable information to plan, solve problems and make more informed personal money management decisions. News and services that will help educate your family and bring it into the "Information Age."

The Best...From The Biggest

Dow Jones News/Retrieval gives you access to a wealth of exclusive information. Quickly. Easily. In the convenience of your home or office. It's the best in business and financial news and data...plus the best in consumer information, such as general news, sports reports, weather forecasts, movie reviews and the full Academic American Encyclopedia. Our customers appreciate the quality of Dow Jones information. That's why **Dow Jones News/Retrieval** is the nation's largest information retrieval service.

Free Introductory Time

If you own an IBM PC, or are about to buy one, ask your IBM authorized computer dealer about the Dow Jones™ Reporter and **Dow Jones News/Retrieval**, or call our toll free hotline for our free color booklet. We'll give you one hour of free introductory non-prime time after you become a customer.

Don't be confused. There are other retrieval services. But only **Dow Jones News/Retrieval** gives you news from The Wall Street Journal and Barron's, along with other news and information essential for business, investing and family education. Step up to the standard of excellence in electronic information that's as good as gold. Subscribe to **Dow Jones News/Retrieval** today.

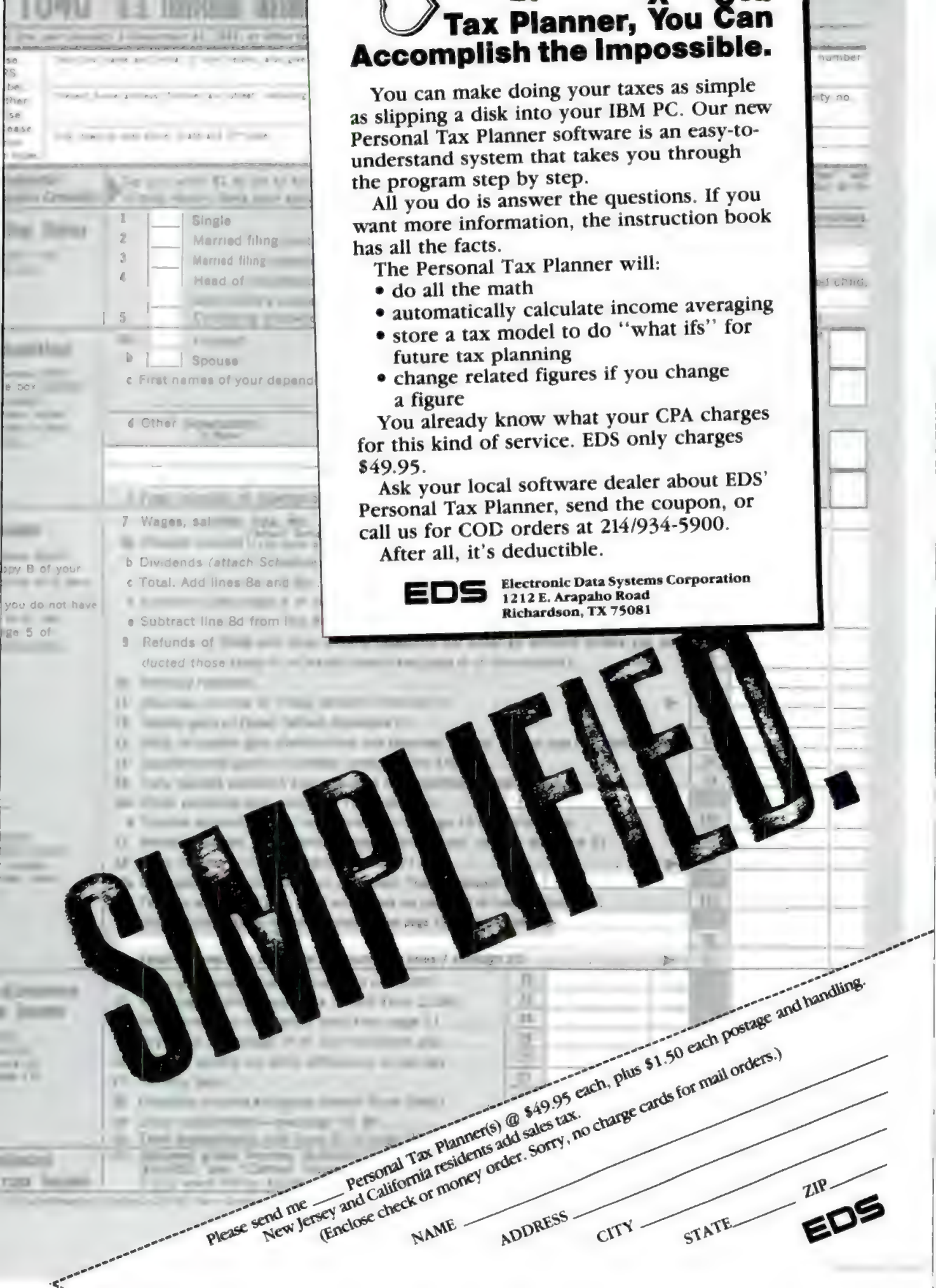
CALL TOLL FREE 800-257-5114

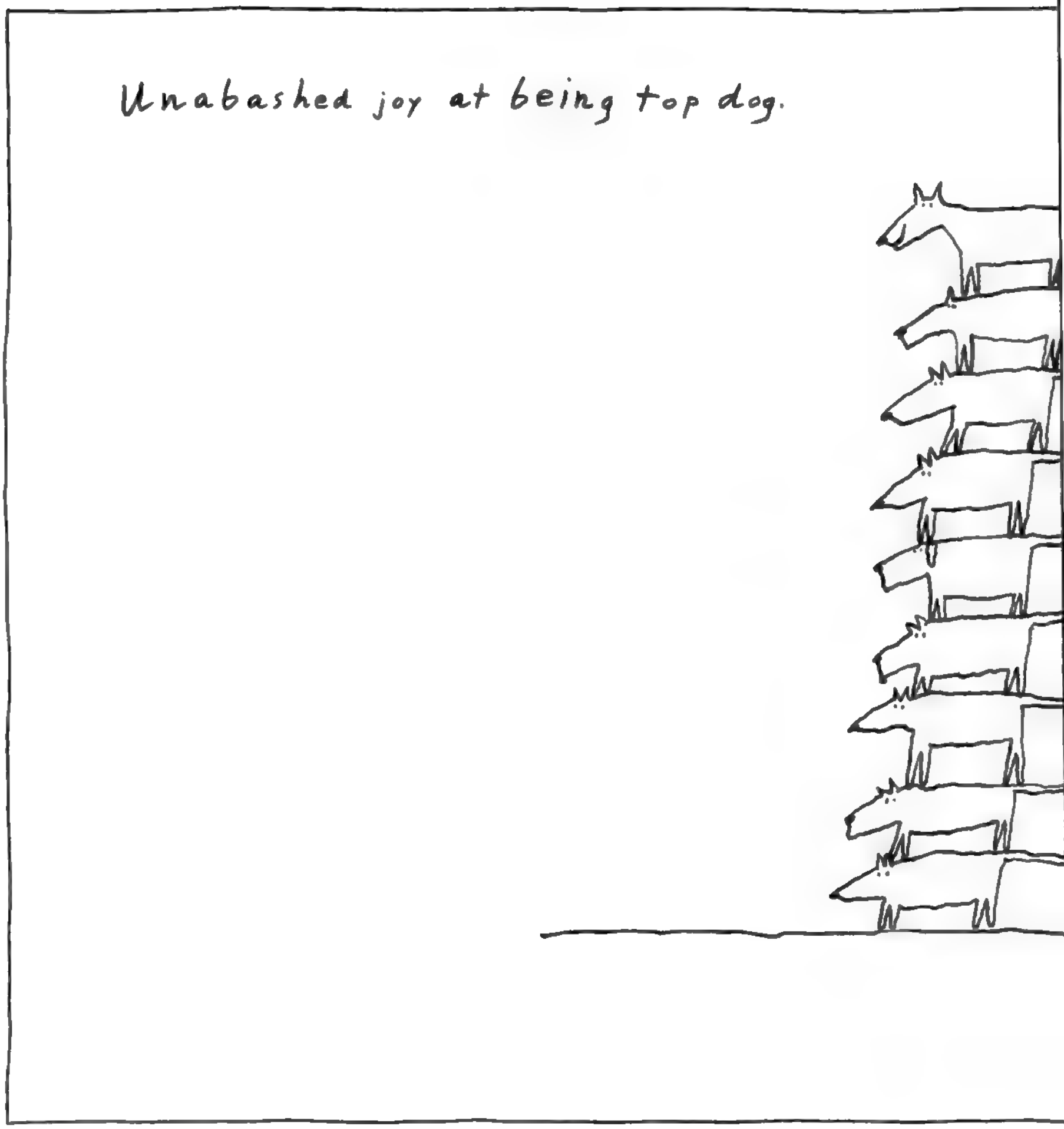
(In New Jersey call 609-452-1511)

DOW JONES NEWS/RETRIEVAL®

DOW JONES NEWS/RETRIEVAL is a registered trademark of Dow Jones & Company, Inc.

Copyrighted material


Tax Planner, You Can
Accomplish the Impossible.
You can make doing your taxes as simple as slipping a disk into your IBM PC. Our new Personal Tax Planner software is an easy-to-understand system that takes you through the program step by step.
All you do is answer the questions. If you want more information, the instruction book has all the facts.
The Personal Tax Planner will:
• do all the math
• automatically calculate income averaging
• store a tax model to do "what ifs" for future tax planning
• change related figures if you change a figure
You already know what your CPA charges for this kind of service. EDS only charges $49.95.
Ask your local software dealer about EDS' Personal Tax Planner, send the coupon, or call us for COD orders at 214/934-5900.
After all, it's deductible.
EDS
Electronic Data Systems Corporation
1212 E. Arapaho Road
Richardson, TX 75081
SIMPLIFIED.
Please send me ___ Personal Tax Planner(s) @ $49.95 each, plus $1.50 each postage and handling.
New Jersey and California residents add sales tax.
(Enclose check or money order. Sorry, no charge cards for mail orders.)
NAME
ADDRESS
CITY
STATE
ZIP
EDS



For the name of the dealer nearest you, phone (800) 227-2400, ext. 948; in California, (800) 772-2666, ext. 948. For more informatio

There's a lot of different software being sold these days, some selling more than others.

In the past year, MicroPro software systems have consistently been named top 10 best sellers for business software in computer stores around the country, according to *Computer Merchandising* magazine.

These systems include the WordStar,® MailMerge® and SpellStar™ word processing packages which can save you a good deal of time when you prepare documents and reports, and the DataStar™ and CalcStar™ packages which help you access files instantly and do financial forecasting in minutes.

All of them run on most all microcomputer systems. Meaning when you choose software for your computer, there's no reason to settle for anything less than the best.

MicroPro®

The Microcomputer Software Company

rite MicroPro, 33 San Pablo Avenue, San Rafael, CA 94903. (415) 499-1200. Come see the InfoStar System at Comdex, booth 346.



CP/M '83®

THOUSANDS OF CP/M SOFTWARE PACKAGES ARE GATHERING IN SAN FRANCISCO

Moscone Center
San Francisco
Friday-Sunday
January 21-23, 1983
Sponsored by

DIGITAL RESEARCH™
The Creators of CP/M

CP/M '83 is an International Exposition and Conference for the CP/M industry and CP/M users. The exposition portion of the event will be the largest presentation of CP/M based hardware and software ever assembled. Nearly three hundred companies using over six hundred exhibit displays, will showcase the full spectrum of application packages, development aids, peripherals, accessories, publications and services for CP/M based computers . . . making CP/M '83 the largest first year computer event ever.

CP/M '83's Conference and Seminar program will include noted leaders from the industry including Gary Kildall, President, Digital Research Inc.; Sol Libes, Editor, Micro Systems Magazine; Christopher Morgan, Editor-in-Chief, Byte and Popular Computing Magazines; Adam Osborne, President, Osborne Computer Corporation; Tony Gold, Founder CP/M Users Group and Lifeboat Associates; Ben Rosen, President, Rosen Research; Portia Isaacson, President, Future Computing; Maggie Cannon, Editor in Chief, InfoWorld; David Crockett, Senior Vice-President, Dataquest; and Gordon Eubanks, Vice-President Language Div., Digital Research. CP/M '83's conference, seminar and workshop program is designed for computer tradespeople and users. The individuals listed above, plus dozens of others, will conduct informative discussions exploring CP/M applications, technical information, development aids, venture capital programs and software distribution. End user workshops will show users how to get the most from their CP/M computer.

CP/M '83 is sponsored by Digital Research Inc., the Creators of CP/M. Over 650 different companies support CP/M and more than 5,000 companies produce CP/M application packages . . . All of these firms will be represented at CP/M '83 . . . so attendees will see and try out application packages for every profession, plus state-of-the-art programs for word processing, telecommunications, graphics and data base management. Also on display or as workshop subjects are development aids to help you program faster, plus hundreds of CP/M compatible products appropriate for your applications.

At CP/M '83 you can explore the entire world of CP/M under one roof and learn more in three days than you could in six months, any other way . . . and everything which is on display is for sale.

Registration is $10 for one-day exhibits-only ticket, or $20 for a three-day ticket which includes admission to workshops, seminars and conferences. Attendees can pre-register thru the mail or purchase tickets at the door. To pre-register, send check payable to CP/M '83 to Northeast Expositions, 822 Boylston Street, Chestnut Hill, MA 02167, Telephone 617-739-2000. Call or write for the schedule of seminars, workshops and conferences plus San Francisco hotel information. All persons attending CP/M '83 can obtain very low, special convention hotel rates.

For information on exhibiting or attending call or write Northeast Expositions.

Name _____
Company (if any) _____
Address _____
City _____ State _____ Zip _____
Telephone (Area Code) _____

Check applicable box—Make checks payable to CP/M '83. Payment must accompany ticket orders.

☐ Send me ____ (quantity) one-day exhibits-only tickets @ $10 each per day.

☐ Send me ____ (quantity) three-day exhibits and conference tickets @ $20 each.

☐ Send me seminar, conference & workshop schedule along with San Francisco hotel reservation information.

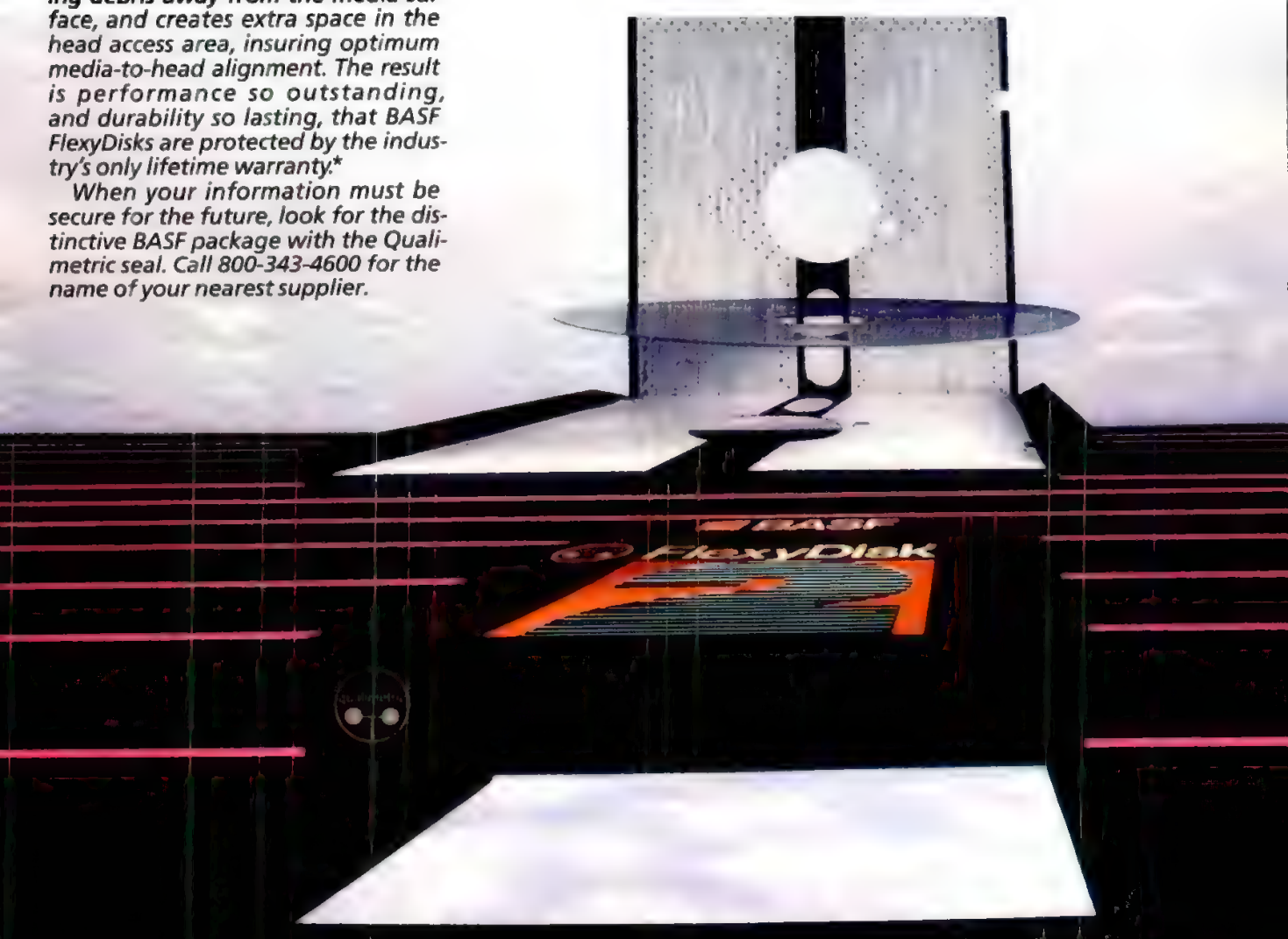
☐ My company may be interested in exhibiting, send me information.

BASF QUALIMETRIC™
INSURING A TOMORROW FOR TODAY'S INFORMATION.

The BASF Qualimetric standard is a dramatic new international standard of quality in magnetic media...insurance that your most vital information will be secure for tomorrow when you enter it on BASF FlexyDisks® today.

*The Qualimetric standard reflects a continuing BASF commitment to perfection...a process which begins with materials selection and inspection, and continues through coating, polishing, lubricating, testing, and 100% error-free certification. Built into our FlexyDisk jacket is a unique two-piece liner. This BASF feature traps damaging debris away from the media surface, and creates extra space in the head access area, insuring optimum media-to-head alignment. The result is performance so outstanding, and durability so lasting, that BASF FlexyDisks are protected by the industry's only lifetime warranty.**

When your information must be secure for the future, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.



ENTER TOMORROW ON BASF TODAY.

BASF

*Contact BASF for warranty details.

© 1982, BASF Systems Corporation, Bedford, MA.

Copyrighted material



VisiCalc® was a swell idea for then.

The next generation. First generation electronic worksheets were a good idea. They were early software management tools that could eliminate a lot of hours with a spreadsheet, calculator, pencil and eraser. Enter Multiplan, the next generation electronic worksheet that's as easy to use as it is useful.

Make comparisons. Compare Multiplan to any of the earlier electronic worksheets. We've given you some "prompts" above.

Compare learning time. Multiplan's tutorial book brings you up to speed. Fast. But Multiplan doesn't stop there. Multiplan's On-line Reference Guide gives you instant help if you have questions. It knows where you are in Multiplan and offers information related to your problem, right on the screen.

Compare ease of use. All Multiplan prompts are full length words or phrases. And Multiplan provides "naming," the ability to assign a plain English name to any cell or area. "Gross Profit = Sales—Cost" rather than "AA44=AZ23—BK154." Which means you can work more intuitively. And faster.

Compare utility. Multiplan lets you link related worksheets so that information is transferred between them automatically. For instance, you can keep regional sales forecasts on separate sheets but link them with your overall company forecast. Then, just change the forecast for any region, and the company forecast sheet is updated automatically. Something you can't do with first generation worksheets.

Compare reports. Not just the work you can do, but the way you can present it. Multiplan's flexible formatting options allow you to produce presentation-quality reports. And its sorting capability lets you sort by either alphabetic or numeric order. So a sales manager who normally lists sales regions alphabetically could sort by amount sold and conveniently rank by sales performance. The

*Based on features in releases VC 20280 AP2 and VC 156Y0 IBM of VisiCalc on the Apple II and IBM PC respectively



Multiplan™ is a great idea for now.

result is a more meaningful and useful presentation of data.

Compare availability. With Multiplan, you're not limited to a single range of computers. Multiplan is available for Apple® and for microcomputers that run MS™-DOS, XENIX,™ or CP/M-80® operating systems. Multiplan supports both 40- and 80- columns on the Apple II.

Compare the source. Microsoft was the world's first microcomputer software company. Today, Microsoft software is running in well over a million installations, worldwide. Languages. Utilities. Business programs. All, maintained at the state-of-the-art.

Compare for yourself. Drop into your computer store. Compare Multiplan's powerful, user-oriented features to any electronic worksheet on the market. If you've been using VisiCalc, Multiplan's ability to directly utilize your VisiCalc files lets you easily upgrade to Multiplan. And that's just another of the many features designed to make Multiplan the electronic worksheet for now. And years from now.

BETTER TOOLS FOR MICROCOMPUTERS

MICROSOFT®



Microsoft is a registered trademark and Multiplan, XENIX and MS are trademarks of Microsoft Corporation

VisiCalc is a registered trademark of VisiCorp

CP/M-80 is a registered trademark of Digital Research, Inc

Apple is a registered trademark of Apple Computer, Inc



TAKE YOUR IBM PC TO THE MAX.™

M Maximum power. Minimum effort.
E Every product from MAX Software Publishing gets the
n most out of your IBM PC. With minimum effort from you.
A And all MAX software is PC-DOS compatible, easy to
u use, fully tested and documented.

T The last word in spelling: The Word Plus™
M Now your computer can proof-read for you. The Word Plus
it finds misspelled words, shows them in context, corrects
a errors, hyphenates — even analyzes your writing style.
T The Word Plus is the most comprehensive, easy-to-use
q program of its kind. And it works with most editors.
A Available now for just $150.

? Share files with other computers. With Move-It.™
M Now you can exchange files between computers — even
o computers with different operating systems — from MS
D DOS to CP/M® or MP/M® for example, when both are
n running the Move-It program.

Move-It is an ideal way to transfer data between dissimilar
media — 5¼" diskettes to 8" diskettes, for example.
Move-It will even emulate a "dumb" terminal to a remote
timesharing system. Available now for only $150.

Write or call MAX now for our complete software library
catalog. From compilers to emulators, to utilities, to
business applications to games — every product takes
your IBM PC to the MAX.

(And if you're a software author, ask how MAX can make
your program or idea into an IBM PC "best seller".)



MAX
SOFTWARE PUBLISHING
2334 Walsh Road, Suite D
Santa Clara, CA 95050
(408) 727-2273
A division of Willoughby Corp.

M Move-It is a trademark of Woolf Software Systems. The Word Plus is a trademark of Oasis Systems. *CP/M and MP/M are trademarks of Digital Research, Inc.

Copyrighted material

BOB RICE

PC Tutor

Using monochrome and color monitors, copying dual-sided disks, and adapting WordStar *for dual printers. Find helpful suggestions here.*

The Color Question

Q: I'm using both the IBM monochrome display and an Amdek color monitor. I've been successful at switching from the monochrome display to the color monitor and back again in BASIC only. This has prevented me from using my color monitor for programs such as *VisiCalc*. Also, when I'm using the color monitor and I return from BASIC to DOS, I lose the picture and must resort to reloading the program. Do you have any suggestions?

Cal Crawford
Los Angeles, California

A: *Almost everyone who has installed dual monitors on the PC has asked about this. Although the BASIC 1.1 manual includes programs on page I-8 that allow users to switch from one display to the other while in BASIC, these programs do not enable you to use the color display when running a .COM or .EXE type of program. Please see "MONO.COM and COLOR.COM" to learn how to change monitors while operating at the command level of DOS.*

The problem of losing synchronization on the color monitor when returning to DOS from BASIC occurs only in DOS 1.0. IBM has corrected this problem in DOS 1.10 by forcing DOS onto the monochrome display when returning from BASIC. Although this may not be the best solution to the problem, it eliminates the need to reboot the system.

Before I leave this subject, I should pass along an experience that one PC owner had while setting up his system with both color and monochrome monitors attached. This individual was developing color graphics software and felt he should be able to boot up his system on the color monitor even though the IBM Personal Computer Technical Reference Manual indicates that the system should be initialized on the monochrome display when both monitors are attached.



SMOKE BEGAN rising from the top of the monochrome display, signaling its demise.

Setting two DIP switches on the system unit board indicates to the Basic Input Output System (BIOS) which monitors are installed. Switch 1—positions 5 and 6 off—indicates that either the monochrome display or both the monochrome display and a color monitor or television are connected to the system. When this setting is used, the system is initialized on the monochrome display. Other switch selections indicate that only a color monitor is attached. Logically, if you wished to have the system start by using the color monitor, it would seem that you could reset the switches to fool the system into believing that only the color display was present.

However, when a monochrome display is attached to the system, don't set the system switches for a color display only. When the system switches are set for a color monitor, the required display initialization is not performed on the monochrome display. It is possible to overdrive the horizontal oscillator, overload the power supply, and damage the monochrome display. In this instance, smoke began rising from the top of the monochrome display, signaling its demise.

The only practical way to initialize on the color display is to include a software program in the AUTOEXEC.BAT file on the program diskette. And when using the monochrome display, you should not wait long for the display screen to come to life. After you turn on your PC, a long delay without the cursor present in the upper left corner of the display might indicate a defective cable or monochrome display adapter, which could damage the display.

Correct Copying

Q: Something very strange is happening with my PC. After formatting a dual-sided diskette, I observed that I had some 320,000 bytes of space available on the disk. I copied the new DOS 1.10 and a few more files onto that disk, only to find that I had run out of room. I checked the diskette again, using the CHKDSK command, and was surprised to find that I had only 160,000 bytes available, even though the format command told me that I had started with 320,000 bytes. What's going on here?

Janet Bauer
Los Angeles, California

A: *While formatting a dual-sided diskette using DOS 1.10, you observed DOS report that almost 320K of diskette storage was available on that diskette. After using the Diskcopy command, you were unable to utilize all space available on the dual-sided diskette.*

It's important to remember that a diskette is not recognized by the system as

dual-sided by virtue of its physical properties, but by its format. When using the DOS format command, the dual-sided format was properly installed onto the diskette. When you invoked the Diskcopy command, however, a mirror image of the source diskette was created and the original PC-DOS 1.10 diskette was formatted as a single-sided diskette. The DOS 1.10 diskette's files as well as its format were copied to the target diskette, destroying the original dual-sided format of that diskette.

You may have overlooked the fact that the new Diskcopy command in DOS 1.10 will allow you to copy a "source" diskette (an original you wish to copy from) without previously having formatted the target diskette (the one you wish to copy to). This feature makes a lot of sense since the original format of the target diskette is erased during the copying process. The message "formatting while copying" will be displayed during the Diskcopy process.

Here is the way to copy diskettes to insure that all the available space on a dual-sided diskette is utilized. Format the dual-sided diskette in a dual-sided drive using the Format command. Then, instead of using the Diskcopy command, use the Copy command to copy the files individually from one diskette to the other. The format of the original diskette will not be transferred to the dual-sided diskette. All the files on a disk may be copied from one diskette to another using global file names. If your source disk were in the A: drive and the target disk in the B: drive, you would utilize the command Copy *.* B: to copy all files from the source to the target disk.

Dualing Printers

Q: I'm using two parallel printers. One is connected to the monochrome display adapter while the other is connected to a Quadram Quadboard. *VisiCalc* allows me to output to either printer 1 (lpt1:) or printer 2 (lpt2:). How do I get *WordStar* to output to printer 2?

Richard E. Ozaroff
New York, New York

A: There is no easy way to switch from one port to the other for functions such as print screen or programs such as WordStar. *However, there is a solution.*

The following BASIC program may be utilized to swap the logical addressing of lpt1: and lpt2:. The physical ports that you're connected to will be accessed with the opposite parallel printer port numbers. In other words, parallel printer port 1 will be accessed with the command lpt2: in BASIC, and parallel printer port 2 will be accessed with the command lpt1:. Programs such as WordStar, which always outputs to port 1, will output to port 2 after using this program.

```
10 DEF SEG=&H40
20 A=PEEK(&H8):B=PEEK(&H9)
30 C=PEEK(&HA):D=PEEK(&HB)
40 POKE &H8,C:POKE &H9,D
50 POKE &HA,A:POKE &HB,B
60 LPT$="2":IF A=&H78 THEN
   LPT$="1"
70 PRINT "Primary printer
   =LPT":LPT$+":"
80 END
```

This BASIC program switches the parallel printer output and should be run prior to the execution of any program that will access the parallel printers. The second time the BASIC program is executed, the printer addressing will return to normal (i.e., parallel printer port 1 will be accessed by lpt1:). If you include this BASIC program in a batch file, or AUTOEXEC.BAT file, be sure to change line 80 from "END" to "SYSTEM" so that the remainder of the batch file may be executed.

For those of you who are wondering how to figure out this kind of problem on your own, let me explain how I went about it. It is important to have some knowledge of assembly language. Having a copy of the IBM Personal Computer Technical Reference Manual is a must. By reading the manual I learned that input/output (I/O) functions are often handled by the Basic Input Output System (BIOS), though some programs bypass the BIOS and perform their own I/O handling. A complete listing of the assembly language BIOS, which is contained in ROM (read-only memory), is available in the appendix of the reference manual.

Section 3 of the manual includes a description of ROM and system usage. On page 3-6 information regarding the use of memory locations says that addresses 408h to 40Fh are where base addresses for

MONO.COM AND COLOR.COM

From colorchrome to monochrome and back again.

This BASIC program will create two program files on your DOS diskette in .COM format. The program named COLOR .COM, when run under DOS, will switch the video from the monochrome display to the color monitor. The program named MONO.COM will do the reverse, bringing you back to the monochrome display.

Load DOS and then Disk or Advanced BASIC. Enter the following program. Save the program on disk under a file name of your choice (just in case it doesn't work the first time you try it). Now run the program. When each file has been successfully created, "COLOR.COM CREATED" and "MONO.COM CREATED" will be displayed on the screen. If you made an error while entering the data statements, "ERROR—VERIFY DATA" will be displayed on the screen and you will have to recheck your work.

Now you're ready to run the COLOR .COM and MONO.COM programs. You won't need to run the BASIC program again. The two .COM programs may be copied onto any other diskettes on which they may be needed.

```
10 REM .... C&M.BAS -- creates files
   COLOR.COM & MONO.COM
20 F$="COLOR.COM":T=0
30 FOR I=1 TO 22:READ N:C=C+N
40 NEXT:READ N:IF N<>C THEN 130
50 T=T+1:RESTORE:OPEN F$ AS 1 LEN=1
60 FIELD 1,1 AS N$:FOR I=1 TO 22
70 READ N:LSET N$=CHR$(N):PUT 1
80 NEXT:IF T=1 THEN PRINT F$:" CREATED"
90 F$="MONO.COM"
100 IF T=1 THEN CLOSE:GOTO 50
105 LSET N$=CHR$(48):PUT 1,11
110 LSET N$=CHR$(7):PUT 1,16
120 PRINT F$:" CREATED":CLOSE:END
130 PRINT "** ERROR - VERIFY DATA **"
140 CLOSE:END
150 DATA 51,192,142,216,160,16,4,36
160 DATA 207,12,32,162,16,4,176,3
170 DATA 180,0,205,16,205,32
180 DATA 2067
```

—B.R.

If your IBM monitor draws a blank when you want it to draw graphics



then you need our Graphics Card.

Until now, if you wanted graphics on your IBM® monochrome display you were out of luck. Well, we've solved that problem.

Introducing the Hercules Graphics Card,™ the only solution to the problem of graphics on the monochrome display.

Now you can get bit mapped graphics on your monochrome display at 720h × 348v resolution without sacrificing the monochrome's high quality text characters.

And your monochrome display's software is compatible with the Hercules Graphics Card, so you can use your word processing and spreadsheet programs.

Our Graphics Card has 64K onboard, and you get two graphics pages with overlay capabilities, or 8 text pages. And each dot has three grey tones, one with variable intensity controlled by the contrast knob on the monochrome set.

The Graphics Card comes with the printer function to control your IBM or Epson printer, and the aspect ratio of graphics printouts is excellent.

The Hercules Graphics Card costs only **$599.** If your local dealer does not carry it, ask him to order one for you. Or, you can order it direct from us for a limited time by calling **(415) 799-9354.**
See us at Comdex, booth 4106.

HERCULES
Hercules Computer Technology
160 Beechnut Drive
Hercules, CA 94547

Hercules Graphics Card is a trademark of Hercules Computer Technology.
IBM is a registered trademark of International Business Machines. © 1982 Hercules Computer Technology.

CAN YOU PERFORM $27? YES!

GRAPHICS
PLOTTING
STATISTICS
SORTING
MANAGEMENT

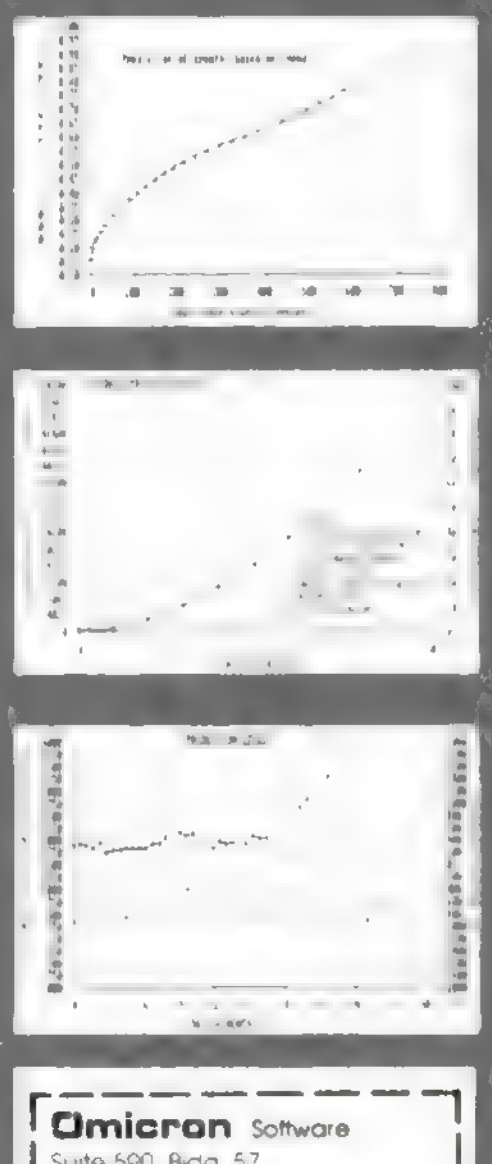
SOFTWARE FOR YOUR IBM PC

SOFTWARE

- **TRANSPLOT** can turn your Epson or IBM printer into a graphics plotter! In less than 3 minutes, with **TRANSPLOT** you can have a hard-copy of any screen image including x-y plots, bar charts, pie charts, pictures, or other graphics images. This screen dump routine includes listable "**TRANSPLOT** samples" and demonstration programs and easy to follow user's guide. Requires color graphics adapter and GRAFTRAX. $27
- **PLOTRAX** is a user friendly, menu driven plotting program. You can easily switch between menus and the screen graphics with single keystrokes. When you are satisfied with the plot or graph's appearances on the screen a single keystroke sends the plot to your printer. You can do linear and polynomial regressions & curve fitting, normal (dual or tri-axial) semi-log and log-log plotting. Flexible! Includes demonstration files and easy to use manual. Requires 64K and graphics adapter. $121
- **SORT** is a super fast multi-key multi-file sorter-merger program. Runs under IBM PC DOS. Flexible field definition. And, of course it just plain sorts too! You can use it with PLOTRAX for sequencing unsorted data or in other sorting applications. $44
- **JOBTRAX** is a planning and monitoring tool for engineering, architectural and construction projects. You can easily plan manpower and resource requirements and monitor project budget and schedule status with easy-to-read graphical reports, and important status information. Manpower planning CPM (Critical Path Method) scheduling. Built in screen editor. Requires 128K and color graphics adapter. $285
- **CROSSFIRE** A video game, and **DRWBOARD** a program which lets you create your own pictures, PLUS **CROSSREF** a program which cross references variables in other programs. $27

HARDWARE

- **GRAFTRAX** plus is a set of three plug-in Epson EPROMS which upgrade early models of The MX-80 and the IBM printer to provide graphics capability (MX-100's are standard with graphics capability). Includes Manual. $58
- **QUADBOARD** Add more byte to your computer. The Quadram four function Quadboard expands your computer's memory as well as adding parallel printer interface, clock/calendar, and asynchronous (RS232) communications adapter. With 64 K RAM $575. With 256 K RAM $965
- **MICROFAZER** No more waiting! The famous Microfazer printer buffer. 8 K $165. 64 K $285



Omicron Software
Suite 590 Bldg 57
Executive Park South, N.E.
Atlanta, Georgia 30329
(404) 325-0124

NAME _____

ADDRESS _____

TRANSPLOT @ $27 EA _____
PLOTRAX @ $121 EA _____
SORT @ $44 EA _____
JOBTRAX @ $285 EA _____
CROSSFIRE
CROSSREF @ $27 EA _____
GRAFTRAX @ $58 EA _____
QUADBOARD 64
@ $575 EA _____
QUADBOARD 256
@ $965 EA _____
MICROFAZER 8
@ $165 EA _____
MICROFAZER 64
@ $285 EA _____
TOTAL _____
Ga. Residents include 3% Sales Tax
Add $5 for postage & handling

the parallel printer adapters may be found. Page 2-67 discusses the parallel printer adapter and gives specific information about the addressing of the first and second parallel printer ports. The BASIC 1.1 manual (Appendix I, page 7) indicates that when two parallel printer adapters are installed, the parallel printer port on the monochrome adapter becomes "lpt1:" and the separate parallel printer adapter becomes "lpt2:".

A DISKETTE is not recognized by the system as dual-sided by virtue of its physical properties, but by its format.

At this point I needed to know specifically how the addresses are stored in memory. By using the BASIC Peek command or the Dump command in DEBUG, I found that the printer port addresses are stored high-order byte first, 2 bytes per address, allowing for four possible printer port addresses. With this information it was easy to see that by swapping the printer port I/O addresses for printer 1 and printer 2, one could effectively redirect the output of each printer number to the opposite printer port.

The information just presented is useful to experienced programmers who are new to the PC. For those of you who are new to programming, try to follow the steps described and don't be afraid to try "peeking" and "poking" around your machine. Keep your important files safely on separate disks while experimenting but don't be afraid to explore. The worst that can happen is that you'll have to turn off the machine and start all over. ***/PC***

PC Tutor answers your questions and solves practical problems of general interest. If you would like to have your questions answered, drop a line to PC Tutor, PC, 1528 Irving St., San Francisco, CA 94122. If you are on The Source, you may send your questions directly to Bob Rice, PC Tutor, TCT335.

The Purrr-fect Combination!™



The most successful computer ever
The most comprehensive catalog to date
And now...PC CAT, the place to call for all your IBM Personal Computer needs

At PC CAT we concentrate on what we do best: Making available to you all the products related to the IBM Personal Computer. Just look at the many products listed in the September issue of PC magazine. From memory boards to educational software, from color monitors to carrying cases, from general ledger to daisy wheel printers ...we can get it for you. Quickly, efficiently, conveniently—and at very attractive prices.

To keep you ahead in the industry, PC CAT will include a complimentary subscription (or renewal) to PC magazine as part of your first order. Should you have any special requirements, just ask for "What's New PC CAT?"

If you are a domestic or an international dealer, PC CAT will help you take advantage of the opportunities in this booming marketplace. Call or write today for our complete dealer package.

Like IBM's Personal Computer, we purrr...form.

© PC CAT Corp., 1982

PCCAT™

PC CAT Corp.
1900 Powell St., Suite 345
Emeryville, California 94608

Phone: (415) 428-9414
Telex: 337281 PCCAT EMVL

IBM is a trademark of International Business Machines Corporation.

PC is a trademark of Software Communications, Inc.

The Purrr-fect Combination and "What's New PC CAT?" are trademarks of PC CAT Corp.

PC CAT is an independent business, not associated with IBM, Software Communications, or the publishers of PC magazine.

SEYMOUR RUBINSTEIN: The Kingpin of MicroPro

PC *interviews marketing wizard, Seymour Rubinstein, founder of MicroPro and cocreator of* WordStar.

During his more than 18 years in the computer industry, Rubinstein has designed software systems for applications in telecommunications, time-sharing, inventory control, banking, and professional organizations. Before forming MicroPro, he was director of marketing for IMSAI.

MicroPro International was established in 1978 with headquarters in San Rafael, California. Rubinstein set out to design software products that would enable the neophyte user to develop systems to meet specific business needs. This marketing strategy was put to the test when MicroPro's WordStar *was placed on the market. Needless to say,* WordStar *quickly became the standard program in the field of word processing for PCs and one of several successes in software development.*

Rubinstein continues to direct MicroPro's growth in other areas. MicroPro was the first PC software manufacturer to create an extensive network of dealer support offices and has recently opened a World Trade Division to reach markets outside the United States.

PC: When was WordStar *first released?*

Rubinstein: Robb Barnaby and I created *WordStar*, and it was released by MicroPro in June 1979. Each of us had different backgrounds in terms of being able to determine what the marketplace wanted and how to provide that product.

PC: WordStar *was not your first venture. How did you get involved in computers?*

Rubinstein: I have been in data processing since 1964 and have had experience working for hardware manufacturers, software houses, and users. I worked on mainframe computers, the IBM 360 series all the way through the 360-3675, 3640, and 3650. I got into the very bowels of the machines, including machine stop and address stop, the total stand-alone use of those machines, and the operating systems. I learned to take them apart and put them back together.

PC: What was your first exposure to personal computing?

Rubinstein: I saw a new store called the Byte Shop of San Rafael. After a few visits and $700, I had purchased an IMSAI personal computer kit. A week later I had a functioning computer. It was a thrilling experience because I had spent so many hours of my life in big, cold, brightly-lit rooms surrounded by enormous hunks of costly machinery. And here was this little thing that I could program in assembly

Photograph: Ed Kashi Hand tinting by Alice Lager



Copyrighted material

language and get out hexadecimal dumps. I was really amazed. After checking on the manufacturer, I gave them a call in San Leandro. A man who I met in 1968 and had asked me to join him in California, was the guy who was running the company.

PC: Is that Bill Mallard?

Rubinstein: Yes. One thing led to another, and I wound up going to work for him. Within a couple of months, I was promoted to IMSAI director of marketing, a post that I held on to for 1½ years until I started MicroPro. During that time, I was able to learn a great deal about the burgeoning personal computer market. I had been through the cycle with the mainframe. I had also been through the cycle with the mini. The micro cycle was just beginning and I planned to jump right in.

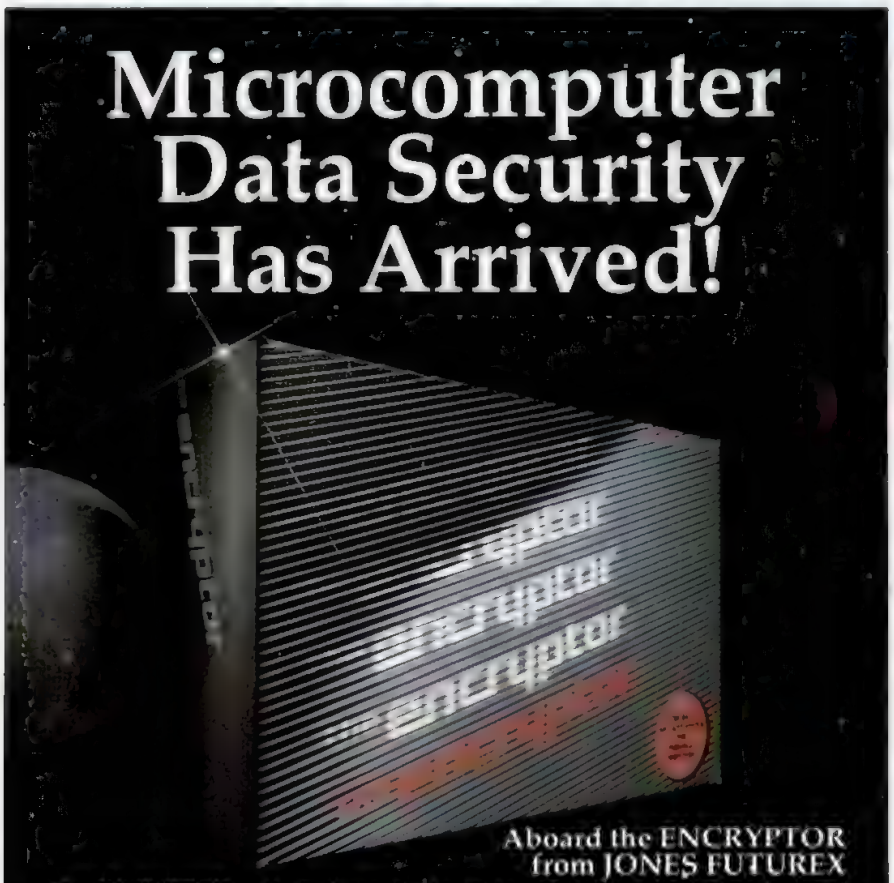
Since I knew software development best, I started MicroPro with the specific purpose of building software for this market. It was a grass roots movement with few competitors. With the right products, I was going to get my company established, make a name for myself, and go on from there. And that's exactly what happened.

PC: Tell us more about MicroPro.

Rubinstein: When I started the company,



Microcomputer Data Security Has Arrived!



Aboard the ENCRYPTOR from JONES FUTUREX

The ENCRYPTOR. . .the high-speed data encryption/decryption device, designed especially for use with the APPLE®, the IBM® Personal Computer® and S-100 microcomputers. A complete hardware/software package, individually tested against National Bureau of Standards methods, the ENCRYPTOR puts the strength of DES (the Data Encryption Standard) at the disposal of business/personal computer users. Files secured (whether stored or for transmission) in a matter of microseconds. Any sensitive data can be quickly and economically protected to a degree never before available on the microcomputer level. The ENCRYPTOR: Easy to afford, easy to install, easy to use.

Manufactured and distributed by JONES FUTUREX, Inc. of Fair Oaks, California. Innovators in the design of digital and video security systems and devices.

For Further information, Contact

JONES FUTUREX, INC.

9700 Fair Oaks, Blvd., Suite G, Fair Oaks, CA 95628 (916) 966 6836

THE *Displaywriter and the IBM PC are basically the same machine.*

I had less than $85,000 in cash and a mortgage on my house. On June 5, 1978 I filed the fictitious business name statement, calling the company MicroPro.

PC: Didn't you start off calling it MicroPro International?

Rubinstein: Yes. I had quite a bit of business experience in Europe. I felt that with the right, well-designed products, Europe would be an approachable market. I had those plans from the outset.

PC: Was WordStar *your first product?*

Rubinstein: No, we marketed two products simultaneously, exemplifying the company's general approach. Presently we have two product lines. One is text management and the other is data. Our first two products were *Wordmaster* and *Supersort*. *Wordmaster* is still one of the best text editors specifically designed for high-speed, efficient use by programs. It is outstanding for creating and manipulating program text as well as ASCII-

based data files.

Supersort has just about every bell and whistle you could imagine in a software merge program. It emulates the best combination of mainframe software that I've ever come across. That's really what it was based on. It can sort up to 32 files concurrently and merge up to another 32 files. It can have up to 32 sort fields in intermixed ascending-descending sequence, intermixed collating sequences, and intermixed data types.

PC: Will they be translated to PC-DOS?

Rubinstein: Yes.

PC: If someone wanted to do word processing on a personal computer before WordStar was released, what could they have used?

Rubinstein: There were basically two choices: *Electric Pencil* and *WordMaster*, a text editor and a run-off program. At



that time we were selling a superior run-off program called *TextWriter*.

PC: What was the initial cost to get a WordStar system up and running—hardware and software?

THIS IS THE BEST DEAL IN TOWN!

CASINO BLACKJACK

IF NOT SATISFIED RETURN IT IN 5 DAYS FOR A FULL REFUND

YOU SET THE HOUSE RULES.
SIMULATE Las Vegas, Reno, Tahoe, Aruba, Atlantic City...

During play you can request to see Card Counts and Percentages.

To practice card counting, you can even change the pace of play.

It's great fun and really shows off your P.C.



INQUIRE AT YOUR NEAREST COMPUTERLAND®

OR ORDER NOW
1-800-547-5995 $29.95 (requires IBM Personal Computer DOS, ABASIC, 64K)
When ordering specify: COLOR GRAPHICS OR MONOCHROME

SURVEY SYSTEMS, INC.
7507 Princeton Avenue • College Park, MD 20740
*IBM is a trademark of International Business Machines Corporation.

VISA MasterCard American Express

WORDSTAR
has one of the best user training guides in the business.

IBM PC Expansion Products
by INTERMEDIA SYSTEMS
11 year old company, producer of industrial quality graphics for Hewlett Packard computers.

Multi-function Memory Modules

512K with 2 Async	$1590
448K with 2 Async	$1490
256K with 2 Async	$895
192K with 2 Async	$795
256K memory upgrade	$695

Memory Modules

256K Bytes memory	$729
192K Bytes memory	$579

- all memory parity checked
- two ASYNC ports fully compatible with IBM's COM1 and COM2 protocol
- all components soldered in place (no sockets)
- all products aged at 50°C and voltage margined
- one year warranty

For further information Call (408) 996-0900.
intermedia systems *10601 S. De Anza Blvd., Cupertino, Ca 95014*

VOLKSWRITER

How to get more from your IBM Personal Computer.

You bought your PC for financial planning and business applications, and you are delighted. You have tried a few games and found them interesting. You have considered word processing, but it seems too hard and too expensive.

Try Volkswriter. You will find it extraordinarily affordable and easy to learn. You and your whole family can use it for correspondence, schoolwork, proposals, resumes, business letters, even simple mailing lists and form letters.

The experts say:

"The name suggests one salient quality of this word processor: it's meant to be used by ordinary folk... The tutorial files do such a good job of teaching the program that you truly don't need a manual." — Craig Stinson, editor, Softalk magazine.

"When we do an evaluation here, it is in a working environment: This issue has seen the internals of at least four text processing programs. And... the winner is... Volkswriter." — Jack Crone, editor, Personal Computer Age magazine.

"It works reliably... it is very fast... The tutorial is a terrific idea." — Will Fastie, Creative Computing.

"The most promising word processor yet for the IBM Personal Computer." — Christopher Morgan, Editor in Chief, Byte Magazine.

"Significantly faster (than EasyWriter 1.1). — Andrew Flugelman, PC Magazine.

To preserve your investment, Volkswriter uses 100% standard DOS files so it is compatible with a great variety of software: VisiCalc, SuperCalc, dBaseII. If you write programs, you have suffered through EDLIN. Volkswriter offers you 3-key block moves, selective search and replace, and true full screen editing. In all DOS languages.

New version 1.2

And it grows with you. If you are looking for dedicated word processing, Volkswriter (version 1.2) offers professional features: underlining, boldfacing, subscripts, superscripts, headers, footers. And supports the new breeds of PC compatible printers: Epson MX—III, NEC 8023, Brother, Smith Corona, NEC Spinwriter, as well as the IBM and Graftrax.

In conjunction with our Fontmaster™ software, you can even use your dot matrix printer for engineering and scientific word processing with equations and formulas.

Volkswriter requires an IBM PC with 64K, an 80 character display, and one disk. For extensive writing, 128K and two disk drives are recommended.

VOLKSWRITER. $195. AN EXTRAORDINARY INVESTMENT.

TEST WRITE VOLKSWRITER
AT YOUR LOCAL DEALER
OR CALL OR WRITE

LIFETREE SOFTWARE, INC.
177 Webster Suite 342
Monterey, California 93940
(408) 659-5531

Dealer inquiries welcome

TWO MILLION PEOPLE COULD USE YOUR SOFTWARE.

TOO BAD THEY'VE NEVER HEARD OF YOU.

At last count, more than a couple of million Americans owned personal computers. And that number is expected to triple by 1985.

That's a fertile environment for software sales. But a lot of personal computer software organizations are discovering it's not as easy as they might have thought.

The problems boil down to these:

Lack of awareness on the part of personal computer buyers. Lack of understanding on the part of personal computer salespeople. Lack of unlimited dollars to advertise in the myriad magazines that reach this small segment or that small segment of the total market.

If any of this sounds like a familiar frustration to you, we've got good news. *LIST* is here. And its advent heralds a new era in cost-effective software marketing.

LIST isn't another guide. It's not another directory. It's an informative new publication that puts software first. And puts you in touch—directly, inexpensively—with the fastest growing segments of the personal computer market.

With *LIST,* you'll be able to reach business and professional people at a critical point in the purchase cycle—*before* they've bought their hardware.

At the same time, you'll be able to impact another significant market segment—those people who already own personal computers, and are eager to learn how they can do more with them.

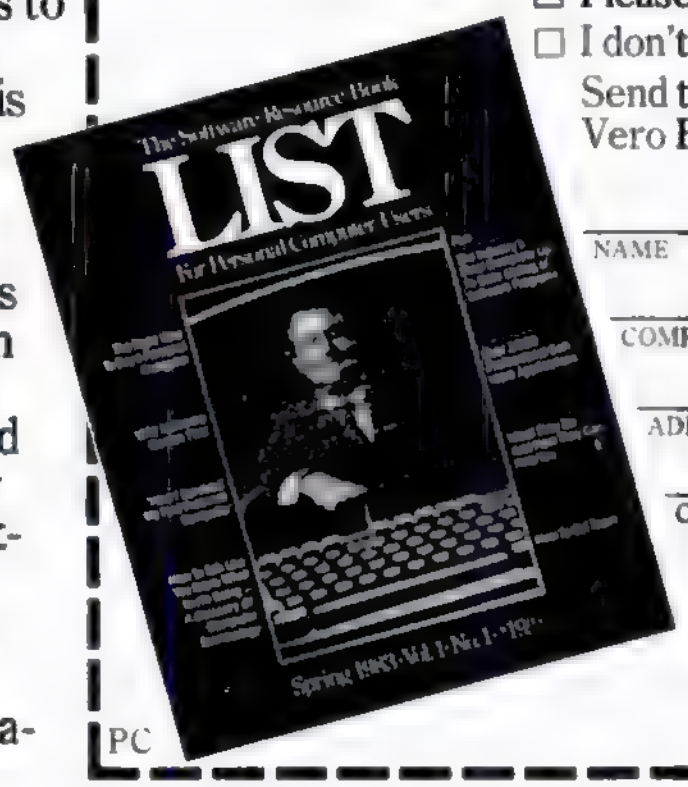
To find out how *LIST* can expand the awareness of your software for less than $200, send us this coupon. (Hurry! We go to press December 15.)

Or don't. And go on being less well known than you deserve to be.

LIST is published by Redgate Publishing Co., an affiliate of E F Hutton & Co.

1 800 327-1300
In Florida call: 1 305 231-6904

"I WANT TO MAKE MORE PEOPLE AWARE OF MY SOFTWARE."



☐ Please send me literature that explains how *LIST* can help.
☐ I don't want to wait on the mails. Call me right away.

Send to *LIST,* Redgate Publishing Co., 3407 Ocean Drive, Vero Beach, FL 32960. **Or phone 1 800 327-1300.**
In Florida call: 1 305 231-6904

NAME TITLE

COMPANY TELEPHONE

ADDRESS

CITY STATE ZIP

PC

LIST™
The Software Resource Book
For Personal Computer Users

© 1982 Redgate Publishing Company

FROM TALLGRASS TECHNOLOGIES

A New Advantage in Winchester Hard Discs and Removable Cartridge Media for the IBM PC.



TG-3006 6Mb Fixed + 12½Mb Removable
TG-3012 12Mb Fixed + 12½Mb Removable
TG-3020 20Mb Fixed + 12½Mb Removable

from $3,095.00 sugg. retail

Advantages–

- 18 to 32 Mb of total formatted storage
- File sizes from 6 to 20 Mb
- Complete transfer/verification of 12½Mb within 10 minutes, no operator intervention required
- ANSI standard certified data cartridge readily available at low cost
- One 12½Mb cartridge holds the equivalent of 40 320K floppies

Tallgrass Technologies Corporation

9207 Cody Overland Park, Kansas 66214 (913) 492-6002

Available from Computerland® and other participating dealers.

Rubinstein: About $10,000, depending on what you were willing to settle for. When we first came out with it, you could have gotten an S100 chassis, a disk drive, and what have you from any of six different manufacturers. The printer cost as much as the computer.

WORDSTAR
has true depth to it; you can't exhaust its possibilities.

PC: Did you start cutting into the dedicated word processing market immediately?

Rubinstein: The dedicated systems were marketed rather than merchandised. I make a distinction between marketing and merchandising. Marketing is having a personal representative selling the end user on the virtues of the product. Merchandising is having storefronts, window displays, and anything other than people helping to make the sale.

PC: Recently someone from PC went to an IBM Product Center; he was shown the Displaywriter but not WordStar. Why was that?

Rubinstein: They make more money that way. The Displaywriter and the IBM PC are basically the same machine. There aren't many differences.

PC: If people are interested primarily in word processing, where should they go?

Rubinstein: I don't believe they would want only word processing. The reason I don't believe it is because a computer is, after all, a general-purpose device. Let's say I went along with you, and you're interested primarily in word processing. It seems to me that what you want is a display that is as pictorial as possible. One that comes to mind is the Xerox Star. The other is the Xerox 860. Both have full-page screens from which you can do a total page composition with font and other effects right on the screen—that is an optimal word processor. If you do anything less than that, you've made an economic compromise; once you've done that, you



Wear It With Pride!

Computer Jewelry from MC/N, Inc. signifies professional involvement in the microcomputer industry. Our unique designer pieces are the perfect solution for gifts, awards, incentives, or premiums.

As lapel pins, tie tacks, or stick pins, they are available in 18K gold vermeil or sterling silver.

Be identified as a micro professional!

Order now by completing the coupon, or contact MC/N, Inc. Satisfaction is guaranteed, or your money back.

MC/N, Inc.
COMPUTER JEWELRY
Simms Center / Box 9393
San Rafael, CA 94912 ***415/453-7033***

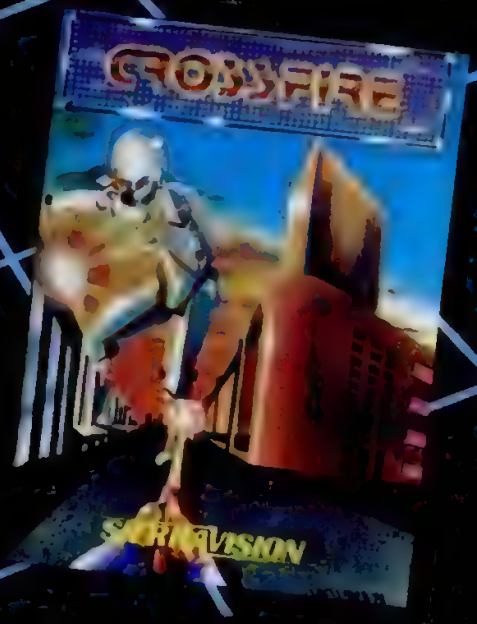
Please send the following pieces of computer jewelry:

	Gold- $12. ea.	Silver- $10. ea.	Amount
Lapel Pin			$
Tie Tack			
Stick Pin			
Sub Total			$
Shipping & Handling			2.00
CA residents add 6% sales tax			
TOTAL AMOUNT ENCLOSED			$

☐ Send info re: Custom 14K or 18K Gold—with or without Diamonds or Rubies
☐ Send info re: Corporate Volume Discounts
☐ Dealer Inquiry
Allow 2-3 Weeks for Delivery

NAME/CO. _____
ADDRESS: _____
CITY: _____
STATE/ZIP: _____ / _____
TELEPHONE: ____ / _____

CROSSFIRE COMES TO IBM



Thousands loved it on the Apple and Atari personal computers, now IBM users can enjoy it, too! This fast-action arcade game sends aliens at you from three different directions on a grid laid out like a city. You can move in any direction, but watch out! - you can also be fired upon from any direction. Can you avoid an attack from all sides and still "clean up" the city? Each time you hit an alien, it evolves into a meaner, faster and uglier monster. After the fourth hit, an alien will finally die. Smooth animation of many objects simultaneously and non-stop action will give you a challenge and enjoyment for hours. See if you can avoid being caught in the CROSSFIRE! Requires at least 48k and a Color/Graphics Monitor Adapter. Available at your local computer store for $29.95 or order directly from:

SIERRA ON-LINE, INC.
36575 Mudge Ranch Road
Coarsegold, CA 93614

SIERRAVISION

Copyrighted material

IBM memory at realistic prices:

256K WITH AN RS-232C INTERFACE **$349**

$529 WITH SUPERCALC

512K WITH AN RS-232C INTERFACE **$579**

$749 WITH SUPERCALC

Both of these fully-populated memory boards include parity checking and a standard RS-232C interface. They are compatible with all IBM software.

You can expect these boards to meet the highest standards of design and manufacturing quality available — at any price. We are proud to guarantee them fully for a period of two years.

Alpha Byte

COMPUTER PRODUCTS

To order or for information call

(213) 706-0333

Modem order line: (213) 883-8976

We guarantee everything we sell for 30 days — no returns after 30 days. Defective software will be replaced free, but all other software returns are subject to 15% restocking fee and must be accompanied by RMA slip. No returns on game software unless defective.

We accept VISA and MasterCard on all orders. COD orders up to $300.

Shipping charges: $3 for all prepaid orders; actual shipping charges for non-prepaids. $3 for COD orders under 25 lbs., $6 for over, plus a $4 surcharge; add 15% for foreign, FPO and APO orders. Calif. add 6% sales tax, L.A. County add 6½%.

Prices quoted are for stock on hand and are subject to change without notice.

31245 LA BAYA DRIVE, WESTLAKE VILLAGE, CALIFORNIA 91362

FileClerk™

The $50 Data Base Management System Limited Only By Your Disk Space!*†

FileClerk™ is our menu-driven data base manager with fully formatted screen input and a capacity of 1250 characters per record in fully user defined records.

Your data can be created and edited on screen and filed by user-defined indexes. Data retrieval is fast and simple and you can generate printouts with your own titles and headings on reports, forms and labels.

FileClerk™ also gives you computation ability on selected fields with accuracy to 15 digits.

This complete dbms written in IBM PC BASIC is only $50!
Call toll-free to order.

Get More From Your IBM PC With These New Products Offered By Software Laboratories!

TARGET PlannerCalc™*††

Does any personal or business planning that can be put into a matrix or a grid-sheet format. Uses English and conventional mathematical logic.

Call toll-free to order! $85

Mathemagic†††

Conquer math problems without programming. Applications for business, science, education and engineering. Turns your IBM PC into a problem-solving tool.

Call toll-free to order! $75

Graphmagic†††

Make important decisions with your data displayed in visual graphs. No programming required. Uses your input or "Calc" files generated by outside programs.

Call toll-free to order! $65

Both for $125

†FileClerk, ††TARGET PlannerCalc, †††Mathemagic and †††Graphmagic are trademarks of Software Laboratories, Inc., Comshare Target Software, and International Software Marketing respectively. IBM is registered trademark of IBM Corp.

* Requires 64k, PC DOS (1.0 or 1.1), and single or double sided disk drive. FileClerk allows multiple data diskettes for each data base.

Mathemagic requires 64k (uncompiled), PC DOS (1.0 or 1.1), and one disk drive.

Both Mathemagic and Graphmagic (compiled) require 96k, PC DOS (1.0 or 1.1), one disk drive, and IBM BASRUN.

ORDER TOLL-FREE 800/531-1309

FREE CATALOG AVAILABLE.

In Ohio, or for technical information or program support, call 614/889-5083. CompuServe 71535,1670.

SOFTWARE LABORATORIES, inc.

6924 Riverside Drive
Dublin, Ohio 43017



THE MICRO cycle was just beginning and I planned to jump right in.

should really look at other potential compromises.

PC: What market did you have in mind when you created WordStar?

Rubinstein: *WordStar* was first intended for the lowest common denominator, but the lowest common denominator did not have screen underlining. I wouldn't be surprised if you see this feature some time. As far as user-friendliness is concerned, the program has evolved in a number of respects. *WordStar* has one of the best user training guides in the business. I don't care whose product you are comparing it to; I think it is a superior product, and judging by its receptivity in the marketplace, others concur.

PC: To what do you attribute WordStar's *popularity?*

Rubinstein: *WordStar* has true depth to it; you can't exhaust its possibilities. You keep finding new things that you can do with this program. It is a very elegant program. A great deal of effort went into designing the specifications.

Many word processing programs allow you to move the cursor, but very few allow you to move the cursor anything but one character or line at a time. *WordStar* also allows you to move the cursor a word at a time, to one side of the screen or the other, or to the top or the bottom. It has an expanding series of cursor movements. Learning how to use these new features can really improve efficiency.

PC: Won't this require the use of multiple keystrokes?

Rubinstein: Not necessarily. It depends on the actual interface you have given the machine. The use of multiple keystrokes is not necessarily a disadvantage. We've made some observations about the original keyboard design and function keys. If the machine is used occasionally, function keys make sense. If the machine is used by a production typist, function keys are not what is needed. It's not possible to strike a function key and get your hands back in the home position without taking your eyes off the work to look at the keyboard.

Compare the levels of lighting in different parts of the work area. The screen is certainly lit, because it has its own light. The material you're working on is usually well lit, but there's almost always a shadow on the keyboard. The keyboard is the least well lit part of the system. You have to shift your eyes quickly under different lighting conditions while moving your hands around efficiently. Having to look for function keys destroys any aim at real productivity.

Hunt-and-peck typists will find that labeled function keys help familiarize them with the keyboard, but they don't really save time. If you have a menu on the screen and you know what you're looking at, using the keyboard's control key isn't particularly different from using function keys.

I'm appalled at the level of unconsciousness that exists in the marketplace with regard to function keys. Some engineer who didn't know how to type probably thought function keys would be a good idea. And all the marketing in conventional word processing has been directed toward people who also don't know how to type.

PC: But on the PC you activated the function keys. Why?



The best thing about being at the top is that I can spend all my time playing Executive Suite™ from Gray Flannel Fun.™

EXECUTIVE SUITE

Rise to the challenge of rising to the Executive Suite at Mighty Microcomputer Corporation.

It's a game of wits. And wit. You'll need plenty of horse sense, and a sense of humor, when Malcolm Farmsworth III (the President) storms into your office demanding to know why his pet project hasn't been completed on schedule. Or when Joyce Stern (the attractive VP of Administration) suggests a decidely non-business tryst after work!

But be warned, some of the answers that might seem most sensible turn out to have unfortunate consequences. Just like in real life.

Executive Suite is a Gray Flannel Fun game from Armonk Corporation. It runs on the IBM® Personal Computer.

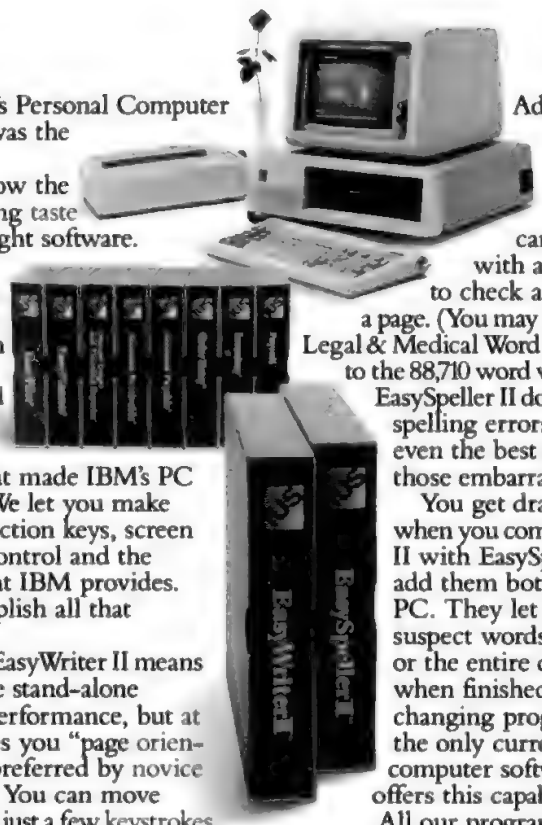
To find out more, ask your local software dealer. Or call Armonk.

ARMONK CORPORATION

610 Newport Center Drive, Suite 955
Newport Beach, California 92660
(714) 760-3955

Gray Flannel Fun and Executive Suite are trademarks of Armonk Corporation. IBM is a registered trademark of International Business Machines Corporation.

WHILE YOU WAITED FOR THE RIGHT HARDWARE, WE DEVELOPED THE RIGHT SOFTWARE.



Choosing IBM's Personal Computer from all the rest was the right choice.

You need to show the same discriminating taste in choosing the right software.

We make that choice easy.

Our EasyFamily™ software is written specifically for your IBM PC, and designed to take full advantage of all the features that made IBM's PC the right choice. We let you make full use of the function keys, screen graphics, cursor control and the built-in power that IBM provides. We let you accomplish all that very easily.

Simply adding EasyWriter II means that you now have stand-alone wordprocessing performance, but at a PC price. It gives you "page orientation," a feature preferred by novice and veteran alike. You can move blocks of text with just a few keystrokes. Move a letter, a word, a line, a page, a paragraph, instantly.

Adding EasySpeller II to your IBM PC, gives you an 88,710 word vocabulary that can be consulted with a single keystroke to check a word, a line or a page. (You may opt for Webster's Legal & Medical Word Lists in addition to the 88,710 word vocabulary.)

EasySpeller II doesn't just catch spelling errors, it also helps even the best speller find those embarrassing typos.

You get dramatic results when you combine EasyWriter II with EasySpeller II, and add them both to your IBM PC. They let you check suspect words as you write, or the entire document when finished. All without changing programs—and the only current microcomputer software that offers this capability.

All our programs are easy to learn, easy to use and easy to buy. We make your work simpler, easier and more productive. So make it easy on yourself. See EasyWriter II and EasySpeller II at ComputerLand, Sear Business Centers and authorized inde pendent IBM Dealers. For more info mation, call (415) 331-6700 or write Information Unlimited Software, Inc., 2401 Marinship Way, Sausalito, CA 94965.

EasyWriter II
EasySpeller II
EasyFiler
EasyPlanner
EasyWriter 1.1
EasySpeller 1.1

Financial Management Series

- **General Ledger and Financial Reporter**
- **Accounts Receivable**
- **Accounts Payable**
- **Order Entry**
- **Inventory Control and Sales Analysis**
- **Payroll**

Rubinstein: You might call it an experiment. What I just told you about function keys I've known for some time. But a company succeeds by selling people what they want, even if what they want is bad for them.

PC: Why don't you copy protect WordStar?

Rubinstein: We feel that relying on the force of the law is a better approach than depriving people of the ability to use the program. We have already demonstrated that we are quite capable and determined to pursue people who exploit us. A company in Santa Clara called Dataforce actually took our program and renamed it *Wordforce*. They got away with it for a while, but then we killed them.

THE USE OF multiple keystrokes is not necessarily a disadvantage.

PC: Did they actually use your codes directly?

Rubinstein: They modified them, but the program was still fairly recognizable. *WordStar* is a very substantial program.

PC: I know of an accounting office that purchased one copy of WordStar *for two or three machines. A neighbor downstairs even uses it. They're all operating on that same multipurpose program.*

Rubinstein: If we catch them, we will sue, and the fines are very substantial. I'm not saying you can't get away with it. Some people even get away with holding up gas stations or banks. The same is true in our industry. We will pursue every reasonable case we encounter.

PC: Let's say you walked into an office and found two computers using one WordStar. *Would you consider that an infringement?*

Rubinstein: It depends. If the company had paid for two licenses, no. But if they hadn't paid for two licenses, yes.

I MAKE A distinction between marketing and merchandising.

PC: Do you think people are hesitant to engage in piracy?

Rubinstein: I think that varies greatly. I would say that people who are more familiar with the law and the penalties are definitely more cautious. Businesses that are exposed to the public are probably more prudent. Certainly the bigger companies, with their corporate images,

SAUCER/PAINTER/PALETTE
From Micro-G — $29.95

SAUCER
YOU AGAINST AN INVADER

A color graphics program where you defend the world against an alien invasion. Bombs and missiles move across the screen in real time. Requires DOS and color card.

PAINTER I
CREATE, EDIT, AND SAVE MULTI-COLORED IMAGES IN 320 BY 200 MODE

This program allows you to draw and display objects in 12 colors in 320 by 200 mode instead of the normal 4 colors. You can save images to disk and load into basic arrays. Requires DOS and color card. (Joy-stick optional).

PAINTER II
SAME AS I EXCEPT B&W IN 640 BY 200 MODE.

PALETTE
SHOWS THE "SECRET" WAY OF DISPLAYING 12 COLORS IN 320 BY 200 MODE

This program is used as a super color chart and demonstrates how you can get 12 distinct colors in 320 by 200 mode. (512 color selections are available).

ALL FOUR PROGRAMS FOR ONLY $29.95
Incl. disk & manual, add $2 for shipping. VISA/MasterCard

MICRO-G
P.O. Box 102 • Duluth, GA 30136 • (404) 476-5779

25-page manual, $1.00

SUPER EDITOR

THIS FULL SCREEN EDITOR IS DESIGNED TO ALLOW THE USER TO MAKE CHANGES TO SOURCE CODE OR WORD PROCESSING TEXT ON ANY LINE ON THE CRT SCREEN.

FEATURES INCLUDE FULL CURSOR POSITIONING CONTROLLED FROM THE KEYBOARD, SCROLL UP OR DOWN, INSERTING LINES AND BLOCK COPY, MOVE, DELETE AND EXCLUDE COMMANDS.

REQUIRES IBM* PERSONAL COMPUTER, IBM DOS, MONOCHROME OR 80 COLUMN DISPLAY.

Program is written in ASSEMBLY language to achieve maximum speed.

SUPER EDIT - PROGRAM DISKETTE AND MANUAL
PROGRAM DISKETTE AND MANUAL . . . $55
MANUAL ONLY . . . . . $ 7
(CA RESIDENTS ADD 6% TAX.)

SEND CHECK OR MONEY ORDER TO:

FRANK SCHIELE SOFTWARE
1375 Tobias Drive, Chula Vista, CA. 92011

*IBM is a trademark of the International Business Machine Corporation.

A SMALL GRAPHICS PACKAGE
simple
complete
consistent
efficient

INTERACTIVE GRAPHIC COMMANDS
move(to) fill put text
draw(to) circle put variable
turn(to) polygon set origin
scale color post segment
read input

SEGMENTED DISPLAY FILE CONSTRUCTION
combine commands into segments
combine segments
nesting and recursion supported
segments optionally on disk

AN APPLICATION SOFTWARE DEVELOPMENT TOOL
interactive screen design
extensive use of single key commands
optional joystick input commands
write/read screen from any BASIC program
optional segment translation to
equivalent BASIC graphic statements
for separate use

for use with IBM personal computer,
64K memory, one disk, dos,
color adapter

package price of $75 includes
diskette and manual

SJM METHODS, INC.
108 PERRY STREET
NEW YORK NY 10014

mc/visa accepted
(212) 691-1517

would be less likely to engage in that kind of piracy.

PC: Aside from legal and ethical reasons, what is the advantage of buying WordStar *instead of copying it from a friend?*

Rubinstein: For one thing, we will be putting in an end user service hot-line. We're also coming out with an end user newsletter. And there's also the matter of updates. None of those services are provided unless you are a registered user.

PC: How many installations of WordStar *are there today?*

Rubinstein: It depends on what you mean. Do you mean the ones that haven't been paid for yet?

PC: The legitimate ones.

Rubinstein: There are several hundred thousand.

PC: Is it the most popular program?

Rubinstein: It is definitely the most popular.

PC: What impact is the IBM PC having on personal computing?

Rubinstein: Probably the most important impact is legitimizing this product for industry. The process was initiated by Apple, to be sure, but IBM's entry into this business makes it possible for companies that are already involved in data processing to consider these machines viable for commercial use. IBM's entry is a very important issue that has far-reaching consequences for marketplace growth.

PC: What about personal computing entering the 16-bit world. Is that important?

Rubinstein: For what this class of computers was originally intended, I think it is relatively unimportant. There is simply no performance difference between an 8088-based microcomputer and the Z-88-based microcomputer that uses floppy disks.

PC: What about increased internal memory?

Rubinstein: That depends on what you're doing with the memory. A program such as *SuperSort* can be a real benefit because sorting and memory is faster. You can get more of the file in memory. In a program such as *WordStar* you can get more text into memory before it pages it out to the disk automatically. That can also be more efficient. But in transaction-based accounting programs, in which you read a record here and write a record there, the difference is not perceptible. It depends on what you're doing.

PC: One thing that slows WordStar *down is having to go back to the disk for program instruction.*

I'M APPALLED at the level of unconsciousness that exists in the marketplace with regard to function keys.

Rubinstein: But with a hard disk we have found it unnoticeable. There's a real trade-off between a hard disk and RAM. Frankly, between you and me, I'd take the hard disk because I get so much more room and so much more bang for the buck. The only time you get bang for the buck with extra RAM is if you're going to run or test.

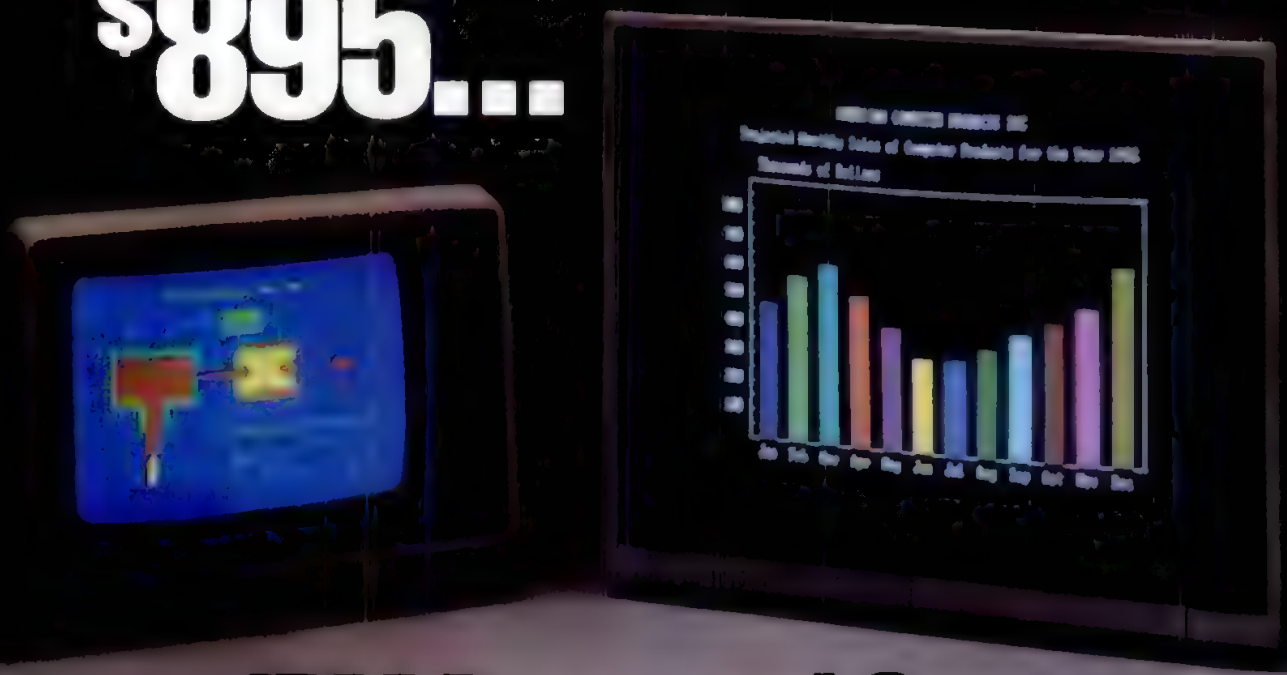
PC: Is the price of software coming down?

Rubinstein: We established our prices some time ago. The price to the end user comes down when more retailers who know how to sell our products in volume get into the marketplace.

PC: We hear some word processing programs for the IBM PC will sell for $50. Is that true?

Rubinstein: If a company markets a program for $50 and also invests in the kind of research and development needed to maintain the product's viability in the marketplace, it would be providing a tremendous philanthropic service. But you can't make money doing that, and businesses have to make money to survive. It's not like a book you write and publish and then keep printing until it stops selling. A word processing program does not have that stability in the marketplace. The competition places great demands on product innovation. ***/PC***

FOR ONLY $895...



your IBM Personal Computer has a choice.

NEC
12" Color RGB Monitor

When it comes to resolution the NEC matches the IBM and surpasses the AMDEK Color-II.

- The NEC's high (690 x 230) resolution matches IBM's (640 x 200) resolution
- The AMDEK Color-II's resolution (560 x 260) does not match IBM's resolution (640 x 200)
- 80 characters with 25 lines
- Includes cable and intensity modification for 16 color capability

Sony Profeel
19" Color RGB Display

At last, Trinitron color is now available on an IBM compatible display.

- Large, easily readable display (possible to read 80 columns at 10')
- Perfect solution to programmers' eye strain
- Store front and classroom displays
- Includes cable and intensity modification for 16 color capability
- Also available in 25" Sony Profeel

AMERICAN COMPUTER PRODUCTS also offers the finest in graphics software and hardware add-on products for your IBM PC. Call today for information or to order: 305-263-7166.

American Computer Products, Inc.

7120 S.W. 48th Lane, Miami, Florida 33155 • (305) 263-7166

**Sony, Profeel and Trinitron are registered trademarks of the Sony Corp. of America. IBM is a registered trademark of International Business Machines Corp.*

Interested In The IBM Personal Computer?



Being a *PC* subscriber is the best way to keep abreast of new products and services for the IBM Personal Computer.

You needn't take *our* word. Here's what *PC* subscribers have to say:

Jack Miller, New Milford, CT.: *"Excellent publication; I read it cover to cover every month."*

Charles Manning, Point Republic, MD.: *"I am a Charter Subscriber and have promptly sent in my renewal for another three years. For an IBM Personal Computer owner the magazine is required reading."*

Jerry Raihl, New York, N.Y.: *"Keep those fat issues coming.* PC *keeps me awake on a 90-minute train ride."*

Richard McConnell, Whitehouse Station, N.J.: *"Good job! The quality of the magazine improves with each issue."*

Michael Szot, Middlebury, CT.: *"Terrific publication so far. I especially like the update news spots and features. Keep up the good work."*

Stephen Cooper, Baltimore, MD.: *"The best computer-oriented magazine on the market. Articles are original and well written."*

Act now. Don't miss a single issue of *PC*. Use the enclosed subscription cards or call our toll-free subscription order number. Subscribers save money—up to 47% off the newsstand price of *PC*.

PC Magazine,
Subscription Department
1528 Irving St.
San Francisco, CA 94122

Toll-Free Subscription Number:
(800) 227-3800 ext. 1136
In California only (800) 792-0990 ext. 1136
Subscription rates are $27 for one year, $46 for two years, $57 for three years.

SUB-SCRIBE NOW!



Save up to 47% off the newsstand price of PC.

Interested in the IBM personal computer? PC is the magazine that tells you all about it.

Subscribe now and save up to $51 off the cover price. You won't want to miss a single issue.

If the attached subscriber cards are missing from this issue,

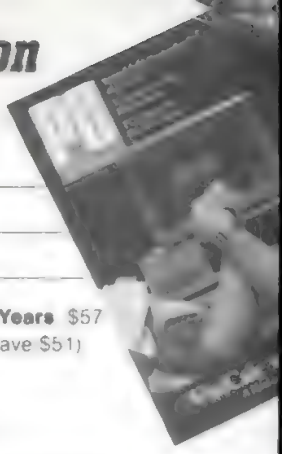
call our toll-free order phones:

In California call
800-792-0990, x1136

All other areas, call
800-227-3800, x1136

Or write to us at:
PC Magazine
1528 Irving Street
San Francisco, CA 94122

YES, Enter my subscription to PC Magazine NOW!



Name _____

Address _____

City/State/Zip _____

☐ **1 Year**, $27 (Save $9) ☐ **2 Years**, $46 (Save $26) ☐ **3 Years** $57 (Save $51)

Rates are double outside the US & Canada.

☐ Payment Enclosed ☐ Visa ☐ MasterCard ☐ Bill me

Charge card # _____

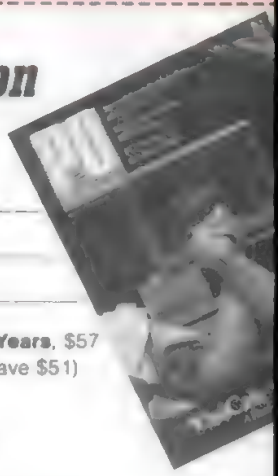
Interbank # _____ Expires _____

Signature _____

Toll-free order phones: **In California, 800-792-0990, X1136**
All other states, 800-227-3800, X1136

0080

YES, Enter my subscription to PC Magazine NOW!



Name _____

Address _____

City/State/Zip _____

☐ **1 Year**, $27 (Save $9) ☐ **2 Years**, $46 (Save $26) ☐ **3 Years**, $57 (Save $51)

Rates are double outside the US & Canada

☐ Payment Enclosed ☐ Visa ☐ MasterCard ☐ Bill me

Charge card # _____

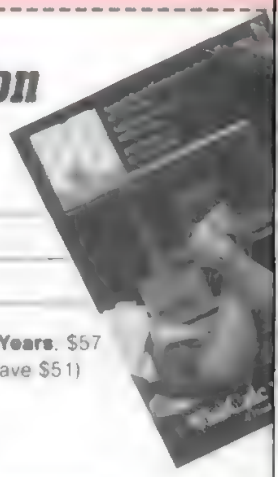
Interbank # _____ Expires _____

Signature _____

Toll-free order phones: **In California, 800-792-0990, X1136**
All other states, 800-227-3800, X1136

0080

YES, Enter my subscription to PC Magazine NOW!



Name _____

Address _____

City/State/Zip _____

☐ **1 Year**, $27 (Save $9) ☐ **2 Years**, $46 (Save $26) ☐ **3 Years**, $57 (Save $51)

Rates are double outside the US & Canada.

☐ Payment Enclosed ☐ Visa ☐ MasterCard ☐ Bill me

Charge card # _____

Interbank # _____ Expires _____

Signature _____

Toll-free order phones: **In California, 800-792-0990, X1136**
All other states, 800-227-3800, X1136

0080

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 21950 SAN FRANCISCO, CA

POSTAGE WILL BE PAID BY ADDRESSEE

PC Magazine
1528 Irving St.
San Francisco, CA 94122

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 21950 SAN FRANCISCO, CA

POSTAGE WILL BE PAID BY ADDRESSEE

PC Magazine
1528 Irving St.
San Francisco, CA 94122

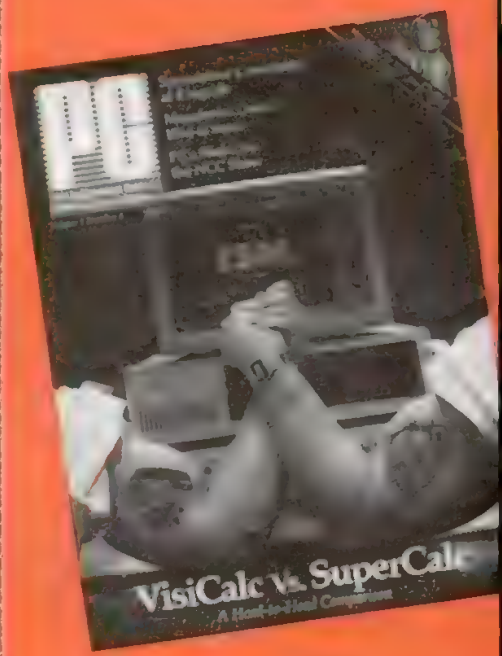
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 21950 SAN FRANCISCO, CA

POSTAGE WILL BE PAID BY ADDRESSEE

PC Magazine
1528 Irving St.
San Francisco, CA 94122

SUB-SCRIBE NOW!



Save up to 47% off the newsstand price of PC.

Interested in the IBM personal computer? PC is the magazine that tells you all about it.

Subscribe now and save up to $51 off the cover price. You won't want to miss a single issue.

If the attached subscriber cards are missing from this issue,

call our toll-free order phones:

In California call
800-792-0990, x1136

All other areas, call
800-227-3800, x1136

Or write to us at:
PC Magazine
1528 Irving Street
San Francisco, CA 94122



Clip a rose for IRMA

After all, the first coaxial cable link between the IBM PC and your 3270 Controller deserves a bouquet.

You can meet IRMA in Booth 2275 at COMDEX.

TAC

Getting computers down to business.

120 West Wieuca Road N.E., Atlanta, Ga. 30042 • 800/241-IRMA Telex: 54-9600

New From CompuSoft

Learning IBM® BASIC
For the Personal Computer



by David A. Lien

The IBM Manual Everyone's Been Waiting For.

Learning IBM BASIC is the definitive new manual for the IBM PC by Dr. David A. Lien, noted author of many popular computer books. This easy-to-follow manual will soon have you writing custom software for your PC – even if you're completely new to computers.

Learning IBM BASIC is an indispensable reference for all PC users. Dr. Lien's techniques are simple and proven effective. Learning is a relaxed, enjoyable experience as you follow his step-by-step instructions. Don't miss this opportunity to learn all about your PC.

Order now. Fill out and mail the coupon, or call our 24-hour order line at **800-854-6505**; in California call **714-588-0996** (8 am – 5 pm).

30 Day Money-Back Guarantee

If you're not totally satisfied with this book for any reason, return it to CompuSoft in saleable condition within 30 days for a full refund.

Please send _____ copies of *Learning IBM BASIC* at $19.95 each (Calif. residents add 6%), plus $1.65 shipping and handling per book within the U.S. Foreign orders, include $2.38 surface shipping and handling per book. 500 pp.

Total Enclosed $ _____

Name _____

Address _____

City/State/Zip _____

☐ Check ☐ Visa ☐ Mastercard

Account # _____ Expiration Date

Signature

Please allow 4 to 6 weeks for delivery.

CompuSoft® Publishing
P.O. Box 19669, Dept. N
San Diego, CA 92119

10 reasons why you should call DataSource® for software...

1. Free Systems Analysis We have developed a variety of self-administered analysis tools to help you identify those products best suited to meet your needs.

2. Competitive Prices Our volume enables us to offer you prices which are consistently competitive. Compare for yourself, then call us toll-free 800-328-2260.

3. Express Service: 7 days per week, 24 hours per day You can place orders any day of the week at any hour of the day or night. Your order will be processed and shipped within 24 hours for all products in stock.

4. Discount Structures We offer significant discounts to any individual, organization or user's group purchasing in quantity.

5. Key Account Program For corporations and institutions, we offer a comprehensive program: volume discounts, complete maintenance packages with an on-site option, specially staffed technical support, tailored training programs and creative financing options.

6. Unconditional Money-Back Guarantee We stand behind everything we sell. If you are not completely satisfied with your purchase, return the item within 60 days and receive a full refund.

7. Toll-Free Technical Support We service what we sell. Our customers have direct access to our technical staff on a toll-free basis. **800-328-2260.**

8. National Maintenance Network We offer a variety of maintenance agreements for both software and hardware products. Call for more information.

9. Flexible Payment Options We accept all major credit cards, checks and money orders, as well as purchase orders from corporate accounts.

10. State-of-the-Art Software and Hardware We carry a broad range of what we believe to be the best in software plus carefully selected hardware products and accessories.

Here's a small sampling of products available now from DataSource.®
(If you don't see what you need, just call us at the number below.)

DBMS	
dBase II - Ashton-Tate	$495
Condor II - Condor	$450
Selector V - Micro-AP	$395
Data Star - MicroPro	$225
Super Sort I - MicroPro	$170
Spreadsheets	
Super Calc - Sorcim	$199
Calc Star - MicroPro	$185
Visicalc - Visi Corp	$159
Visicalc 256K - Visi Corp	$195
Word Processing	
Wordstar - MicroPro	$289
Wordstar/Mailmerge - MicroPro	$385
Mince - Mark of Unicorn	$148
The Final Word - Mark of Unicorn	$250
Spelling	
Spellguard - Sorcim	$225
Spellstar - MicroPro	$165
The Word - Oasis	$ 70
Communications	
Cross Talk - Micro Stuf	$145
Emulink - Micro Link Corporation	$995
Move It - Woolf Software Systems	$110

Misc Software	
Mathemagic - Int'l Software Marketing	$ 75
NWA Statpak - Northwest Analytical	$395
Optimizer - Supersoft	$145
Hardware	
Smith-Corona TP-1	$689
C.Itoh F-10 Star Writer - 40 CPS	$1,475
C.Itoh F-10 Printmaster - 55 CPS	Call for price
C.Itoh Pro Writer	$515
C.Itoh Pro Writer-Serial	$650
Hayes Smart Modem 300	$230
Hayes Smart Modem 300/1200	Call for price
Signalman MK I Modem	$ 99

NEW! Only from DataSource®
EMULINK for the IBM PC.

On-Line Binarysynchronous link to the big IBM host. Full 3270 emulation for the IBM Personal Computer. Complete documentation included with diskette and board. **$995.00**

Please include 3% for shipping and handling. Minnesota residents, add 5% sales tax Prices subject to change without notice.

FOR MORE INFORMATION CALL TOLL-FREE

American Express
MasterCard
Visa

1-800-328-2260

IN MINNESOTA, CALL 612-544-3615

DATASOURCE® systems corp.

Your source for micro software and hardware

DataSource Systems® Corporation, Dept. CB, 1660 So. Highway 100, Minneapolis, MN 55416





GEMINI–
FOR PRINTER VALUE THAT'S OUT OF THIS WORLD

Over thirty years of down-to-earth experience as a precision parts manufacturer has enabled Star to produce the Gemini series of dot matrix printers—a stellar combination of printer quality, flexibility, and reliability. And for a list price of nearly 25% less than the best selling competitor.

The Gemini 10 has a 10″ carriage and the Gemini 15 a 15½″ carriage. Plus, the Gemini 15 has the added capability of a bottom paper feed. In both models, Gemini quality means a print speed of 100 cps, high-resolution bit image and block graphics, and extra fast forms feed.

Gemini's flexibility is embodied in its diverse specialized printing capabilities such as super/sub script, underlining, backspacing, double strike mode and emphasized print mode. Another extraordinary standard feature is a 4k buffer (with an additional 4k on the serial board). That's twice the memory of leading, comparable printers. And Gemini is compatible with most software packages that support the leading printers.

Gemini reliability is more than just a promise. It's as concrete as a 180 day warranty (90 days for ribbon and print head), a mean time between failure rate of 5 million lines, a print head life of more than 1 million characters, and a 100% duty cycle that allows the Gemini to print continuously. Plus, prompt, nationwide service is readily available.

So if you're looking for an incredibly high-quality, low-cost printer that's out of this world, look to the manufacturer with its feet on the ground—Star and the Gemini 10, Gemini 15 dot matrix printers.

star®
micronics • inc

MAKING A NAME FOR OURSELVES

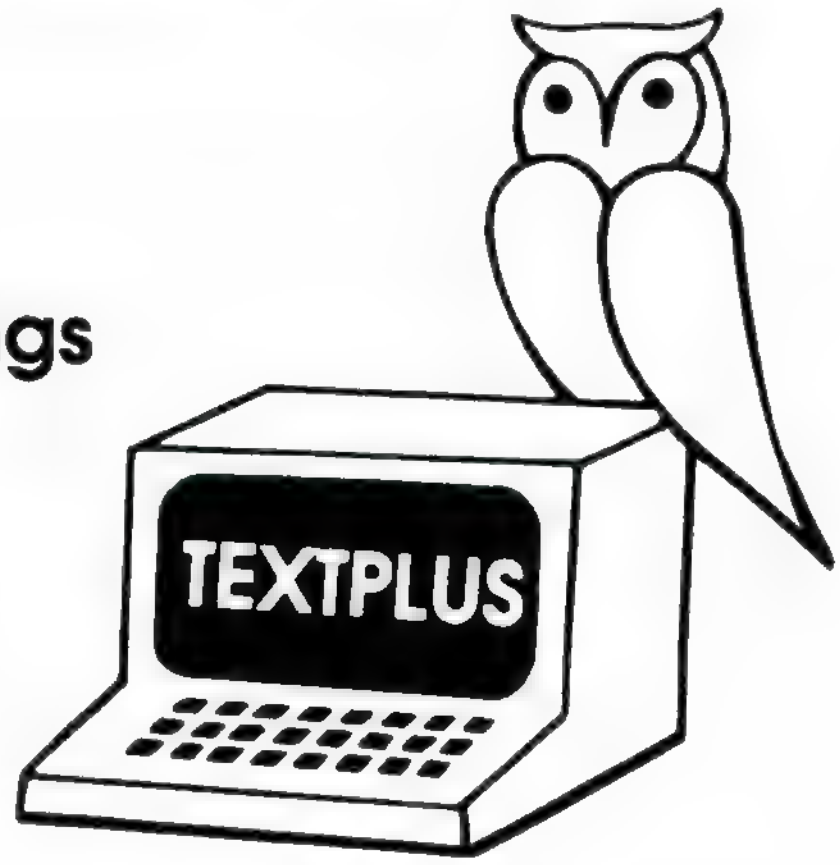
1120 Empire Central Place, Suite 216, Dallas, TX 75247
For more information, please call Bob Hazzard, Vice President, at (214) 631-8560.

Copyrighted material

TEXTPLUS

THE EXECUTIVE INFORMATION SYSTEM

Word processing
Mailing labels
Personalized mass mailings
Data base manager
"Card file" applications
DOS file compatible
Easy to use



Written for the IBM PC. Comprehensive 200 page manual. Easy to use. Function key meanings are always displayed on the bottom line. Extensive prompting and HELP screens available. All you need is the IBM PC with 64KB, one disk, an 80 column display, and the IBM DOS Diskette. The IBM, Epson, or NEC 3550 printers are recommended. You may define control codes for othe printers. Typestyles are easily changed. **TEXTPLUS** is the easy and natural work processor.

NEW — TEXTPLUS 128KB Version

Supports larger files and runs faster. Requires 128KB.
We recommend it.

To order or ask technical questions — Call (213) 982-6243

Dealer inquiries invited.

IBM® is a registered trademark of International Business Machines

☐ Send me **TEXTPLUS** 64KB Version for $200.00
☐ Send me **TEXTPLUS** 128KB Version for $240.00
☐ Send me just the manual for $30.00

☐ VISA ☐ Mastercard
☐ Check / Money Order
☐ Send more information

NAME _____

COMPANY: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____



Owl
SOFTWARE CORPORATION

SIGNATURE: _____ CARD #: _____ EXP. DATE: _____

OWL SOFTWARE CORPORATION • DEPT. P • 1605 E. CHARLESTON BLVD. • LAS VEGAS, NV 89104

FORM 1040 1982 U.S. INCOME TAX RETURN



ABACUS TAX RUNS LIKE A GREYHOUND

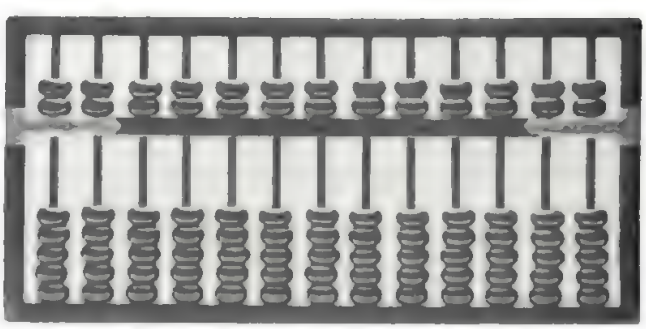
Basics: Abacus Tax (now in its fifth year) does all the things you expect a tax system to do: Like handling all common and most uncommon forms and schedules. It is fully integrated to pass numbers back and forth between forms wherever needed. Everything that should be automatic, is automatic.

Unique: Only Abacus Tax has standard and user defined diagnostics plus source referenced data reports. And what other tax system allows you to easily add or change (without programming) federal and state forms, cover letters, memorandum and diagnostic messages?

Quick: Abacus was originally developed to improve productivity in one CPA firm. A snap. While it was not designed to chase rabbits, had it been, it would.

Abacus Tax is available for a wide range of microcomputers using CP/M* plus the IBM personal computer. Price: $700. Write or call now for the rest of the story on this masterpiece. Dealer inquiries invited.

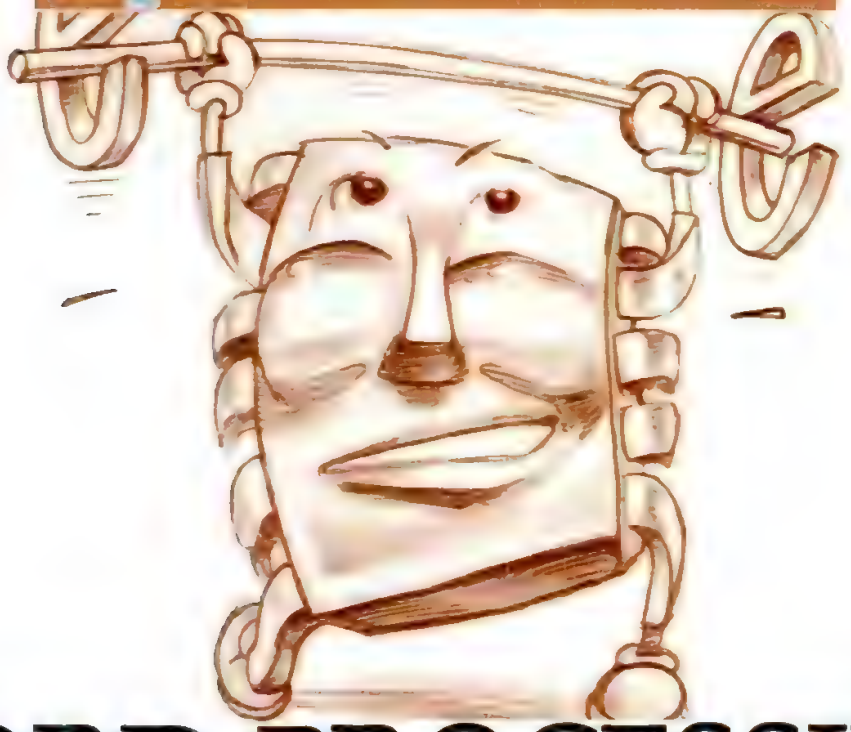
Abacus Tax Software
3811 Caravelle
Anchorage, AK 99502
(907) 338-6062



*Digital Research trademark

© 1982 Abacus Tax Software

PC Magazine Special Section



WORD PROCESSING

PC focuses on word processing: product reviews, tips for professionals, and information on topics such as the basics, hardware, and software.

If you've never used word processing, you are missing out on one of the best reasons to own a computer. People who produce written documents, whether personal letters, business correspondence, corporate reports, newspaper articles, or books, owe it to themselves to investigate word processing. Many writers have found that once they move from pen, paper, and typewriter to word processing, they enter a world in which they can correct mistakes without retyping pages, number pages automatically, change sentence or paragraph order as needed, and check spelling against an electronic dictionary.

This month *PC* focuses on word processing. Topics range from word processing concepts, to hardware and software, to word processing as a profession. A book excerpt takes familiar writing materials, such as typewriters and even the ancient parchment scroll, and presents them as the basis for introducing the fundamentals of producing documents with computers. In the area of hardware, we take a close look at how easy (or not so easy) it is to use the PC keyboard, and we present discussions of characteristics, speeds, and prices of letter quality printers. For readers who are looking to buy a printer or want to test the speed of the one they have, we've included a printer speed test.

Our software section reviews seven word processing programs and other programs, such as spelling checkers, which make document production easier, faster, and more accurate. A special chart compares the features of 20 of the best known word processing programs.

For readers who are in the market for word processing software, we've included an article on selecting a word processing program. Another presents comments on the need to develop practical user-oriented tools for document production. If you're looking for ways to increase the usefulness of the PC, you'll want to read about how the PC functions as a typesetting system. And for those who are interested in word processing as a profession, we present information on organizations that employ word processing professionals and a glimpse into the work life of some of the pros. Another story of interest to professionals discusses the acceptance (or non-acceptance) by publishers of documents produced with dot matrix printers.

For newcomers and old hands alike, there's a lot to be learned about word processing. Whether you're interested in the basics or in the latest information on customizing the PC keyboard for your own word processing system, we're sure you'll want to read ahead.



Like the inspiration for its name, VW doesn't go in for lots of frills but performs essential functions very well.

Volkswriter 1.1: Camilo Wilson's Claim To Fame

Volkswriter
Lifetree Software
177 Webster St.
Monterey, CA 93940
(408) 659-5531
List Price: $195

It was mid-January 1982. I'd been fooling with my IBM PC for almost 3 months. Version 1.00 of *EasyWriter* had shown itself to be pretty much a lemon, and no one knew when an IBM PC version of *WordStar* might roll off the assembly lines to the rescue. I was supposed to be using my computer to write a 100,000-word book, due in 3 months. Panic was setting in.

In the midst of this despair the phone rang and a voice introduced itself with a lyrical accent: "My name is Camilo Wilson; I've just written a word processing program. Would you like to try it?" Was it possible that while I was simply complaining about the lack of word processors for the PC, someone else had mastered IBM's Pascal compiler and actually written one?

It was possible. I was introduced to the program that was to become *Volkswriter*—and my salvation. The writing project was completed more or less on schedule, thanks to the timely appearance of Wilson's program and the reliable service it provided.

Now, 9 months after that blessed phone call, *EasyWriter* has been recalled and corrected, *WordStar* and a host of other writing vehicles are filling the showrooms, and *Volkswriter* may no longer claim the distinction of being the only fully functioning word processor available for the PC. But for ease of use, performance, and versatility, it leads the pack in the word processor Grand Prix.

Program Requirements

Volkswriter (VW) runs under PC-DOS (version 1.00 or 1.10). While you can get by with only one disk drive, two drives (single- or double-sided) are recommended. And while you can run *VW* perfectly well with 64K of memory, you should have more memory in your system to make the best use of the program.

The reason for the memory recommendation is that *VW* loads the entire

Copyrighted material

Update: Here Comes Volkswriter 1.2

Hold the presses: VW introduces a new model.

After the accompanying review of *Volkswriter* had already been sent to the typesetter, Lifetree Software, the manufacturer, announced a revision of *VW*—version 1.2. Without seeing the review, the Lifetree people addressed almost every one of my major criticisms. This is why software reviewers and magazine editors (and writers) age prematurely, and why you, the consumer, benefit from fierce competition for your business and loyalty. We decided to leave the review of version 1.1 intact. Following are improvements in the latest version of *Volkswriter*.

- You can now embed an unlimited number of headers and/or footers on each page, on any line, with the options of justifying left or right, centering, or alternating left and right justification. Automatic page numbering can be included as part of the text of the header.
- Consolidation of the program has increased the maximum file size (with a 64K system) to about 15,000 characters. I would still recommend 128K of RAM to take full advantage of the program.
- The new program permits printing of a file from the major edit mode without re-retrieving the file. This helps bridge the gulf between editing and printing modes. More significantly, the manufacturer now offers a program that combines all editing and printing features. This combined version requires 128K of RAM. If you have that much system memory, request this version; it works much more efficiently.
- *VW* 1.2 permits temporary indentation of the left margin on a paragraph by paragraph basis. This makes it a little easier to produce outlines and reports.
- Program commands are now buffered so you can enter several commands in rapid succession.
- The program has been made compatible with more printers, including the Epson MX80-III, NEC 8023-A, NEC Spinwriters, Smith Corona TP-1, and Brother HR-1.
- The best news of all is that version 1.2 will not be copy protected. Another victory for the forces of good.

Lifetree will supply the new version free to anyone who purchased the former program after September 1, 1982. Those who purchased *VW* prior to that date can receive version 1.2 for a $20 update fee. Registered owners will be contacted by Lifetree.

Are there any disappointments left? Not too many. The new *Volkswriter* still limits lines to a maximum of 80 characters. I would like to see more exotic editing and formatting features. Despite my curses for the last-minute notification, this new version is a dandy. That MG convertible just turned into a Porsche. —*A.F.*

into memory during editing and printing operations. Since the program itself guzzles about 45K (depending on function) and DOS requires about another 8K, only about 12K of memory is left for text. In a 64K system running DOS 1.10, *VW* can edit a text file of up to 13,362 bytes and print a single file of up to 9,392 bytes. There are ways to create and print larger documents, but if you have only 64K of memory, editing text files longer than about five double-spaced manuscript pages becomes impossible. With 128K or more, *VW*'s maximum file size becomes a very comfortable 59,680 bytes—about 40 manuscript pages.

Other word processing programs may impose less severe limitations with 64K, but they also require more than 64K to work at their best. And as you'll discover, *VW* compensates for its memory appetite by performing like a champion speedster.

Using and Learning

VW may be short on the frills, but it is extremely friendly, logical, and easy to learn. The command menu clearly states the initial program options (see Figure 1). In the editing mode, all functions are invoked with the ten special function keys and the ten [Alt]-function key combinations (see Figure 2). On-screen reference to these 20 commands is no further than pressing [F1]. For a first-time user these single-key commands make for a smooth transition to electronic writing.

Volkswriter also offers an on-screen tutorial that provides a clear orientation to both the editing features of the program and word processing concepts in general. The program manual is brief, conversational, comprehensible, and handsomely printed. If I needed to have a novice using a word processor within an hour, *VW* would be my choice. I also suspect that *Volkswriter* is an ideal program for introducing children to word processing.

VOLKSWRITER's *block move function is as fast as a drag racer.*

Editing

Once you start writing or editing with *Volkswriter*, you'll be struck by its most impressive feature—speed. There is hardly an editing function that doesn't execute immediately upon command. *VW* responds fast because the whole text file is loaded into memory and because it writes revised information directly to the screen's memory map rather than "typing" revised text to the screen. Scrolling up or down a screenful of text or the entire text file occurs with no noticeable delay. I was amazed the first time I experienced this responsiveness.

The necessary editing commands are all provided. The cursor can be moved a character or a word at a time and to the top or bottom of the screen. Text can be scrolled by half or full screenfuls. Insertions are squeezed into the text a character at a time at the cursor position. There are three delete possibilities: delete character at cursor position, delete to end of word, and delete to end of line. All of these functions operate without delay.

One quirk that poses a slight inconvenience occurs as you move the cursor past the last character displayed on a line. Moving the cursor forward sends it further along the blank portion of that line, rather than wrapping it immediately to the next line. Similarly, moving the cursor back one character from the beginning of a line sends it to column 80 of the previous line

rather than to the last character on the previous line. To make the cursor wrap immediately, hit [Ctrl]-[cursor right] or -[cursor left] and jump to the next word.

As with many word processors, paragraphs can become fragmented when characters are inserted into previously written text. There's a conventional Reform command for realigning them that operates from the cursor position to the end of the paragraph. This is an instantaneous operation. The present version of the program preserves the integrity of indentations and spaces within the paragraph during reformatting.

VW's block move function is as fast as a drag racer. Blocks of text can be moved or copied within the file in microseconds, regardless of the size of the block and without any superfluous commands. However, blocks can be marked only in whole-line increments; you cannot isolate and move words within a line or shuffle sentences within a paragraph. This limitation is really more conceptually annoying than practically inconvenient.

The find and replace functions are also efficient and fast. You can search for each occurrence of a string of characters as well as replace a string with a substitute, either selectively or globally. There is no provision for ignoring case during searches, so you will not find "Personal" if you're searching for "personal." The remedy for this is to search for "ersonal."

An interesting feature of the program is that it starts its search wherever the cursor is positioned in the file, continues to the end of the file, and then loops back to the beginning to continue the search. A handy feature is that any character can be searched for, including control and high-bit characters.

Control characters are those with ASCII values less than .32; high-bit characters are those with ASCII values between 128 and 254. Any of these can be entered by holding down [Alt], typing the desired ASCII value on the numeric keypad, and then releasing [Alt]. This capability is built into the PC's keyboard routine, but *Volkswriter* supports it by allowing these control and high-bit characters to be entered into the file being edited. *VW* displays these according to the standard PC graphics character set.

The only screen formatting control offered is the ability to set the right margin to a maximum of 80 columns. There is no provision for automatic indentation or varying of the left screen margin as opposed to indentation while printing.

Each of these functions is invoked with a single, special function key, resulting in a command efficiency that further enhances speed. The total effect is of an almost effortless, instantaneous writing tool. When I'm in the editing mode, I feel like I'm driving a Formula One machine rather than a Beetle.

Printing

When it comes to printing files, *Volkswriter* gets both high and low grades. It receives honors for its comprehensive method of setting and storing print formats. When it's in printing mode, you can call up a menu that displays all the active printing parameters (see Figure 3). You can use this menu to check the parameters or you can revise any or all of them by proceeding down the menu.

The real beauty of *VW*'s format system is that each modified format can be given a name, such as LH.FMT, and be stored as a file on disk. You can then recall this format file, putting into effect all the parameters with a single command.

Making use of this feature, you can create and store separate "canned" formats for each of your writing applications: a letterhead format file for correspondence, a draft manuscript format file, single- or double-spaced format files, envelope and label format files, and format files with different margin and type style settings. You can also create a special format file, VW.FMT, which is implemented as the default printing format when the program is loaded.

A further advantage is that you can invoke these saved format files by embedding format instructions within a text file. Thus you have the ability to change all the printing parameters with a single embed-

THIS PROGRAM is not going to veer off and leave you in a ditch.

Discount IBM PC Software

Manufacturer/Product	List Price	Our Price
This Month's Specials		
WordStar & MailMerge	$645	**$375**
WordStar & SuperCalc	790	**481**
WordStar & MailMerge & Spellstar	895	**455**
MicroPro®		
WordStar	495	**284**
MailMerge	150	**95**
Sorcim®		
SuperCalc	295	**199**
Information Unlimited Software®		
Easywriter II	350	**261**
Easyspeller	175	**143**
Easyfiler	400	**310**
Lifetree Software, Inc.®		
Volkswriter	195	**147**
Innovative Software Applications		
Spellguard	295	**224**
Innovative Software, Inc.®		
T.I.M. III	495	**384**
Ashton-Tate		
dBASE-11	700	**475**
Washington Computer Services®		
Record Management System	395	**346**
RMS including asm source code	1345	**1178**
Emerging Technology Consultants, Inc.		
EDIX Editor	195	**186**
PC-Logic Systems®		
SCREEN-FORMATTER	35	**31**
Computer Innovations, Inc.®		
C86 C Compiler	250	**219**
OMRIC*		
Space Guardian	35	**31**

We carry more than what's listed here!

- All software runs on IBM PC-DOS unless noted.
- Check out our agressive prices—please call or write for our latest catalog of IBM PC software.
- Inquiries from manufacturers of IBM PC software are invited.

Terms of Sale

DEDUCT 3% FROM ABOVE PRICES FOR PREPAID ORDERS.

Shipping is included on orders over $200. Add $4 shipping and handling on orders under $200. California residents add sales tax. Overseas orders add $10. Instock items shipped same day. All products subject to availability. All prices subject to change at any time and without notice. Payment by check, money order, MasterCard, or VISA. Credit card orders must include card type, number, expiration date, signature, and phone number. Orders paid by personal check will be held 10 days to clear bank. No waiting on certified checks, money orders, or charges. **Credit card orders *only* may call collect.**

* Manufacturers' Trademarks
IBM® is a registered trademark of International Business Machines Corp.
CP/M-86® is a registered trademark of Digital Research, Inc.

To order, write or call:



Personal Computer Software Specialists
6531 Crown Boulevard, Suite 3A
San Jose, CA 95120
(408) 997-5033

FREE SURFACE FREIGHT

"Quality Products from
Your Business Software Psychologist" ™

MIRCO PRO INTERNATIONAL*

Wordstar*	289
Mailmerge*	99
Spellstar*	139

EDS (Electronic Data Systems)*

Communicator Text Editor*	99

IUS (Information Unlimited Software)*

Easy Writer II*	249
Easy Speller*	129
Easy Filer*	289
Easy Planner*	189

CONTINENTAL SOFTWARE CO.*

Home Accountant Plus*	99
First Class Mailer*	79

PEACHTREE SOFTWARE INC.*

Series — 4 Accounting Pack* GL AR AP Save over $1 000	595

ASHTON TATE*

dBase II*	595

UVEON COMPUTER SYSTEMS INC.*

Optimum* Data Base Management (More features than dBase II)	Late Fall

POWERSOFT, INC.*

Real Estate Analyzer*	99

HOWARD SOFT*

Real Estate Management*	215

SELECT INFORMATION SYSTEMS*

Select with Superspell* (Word Processing)	449

DENVER SOFTWARE*

EASY* (Executive Accounting System)	595

SORCIM*

Supercalc*	189

LEXISOFT*

Spellbinder*	319

SOFTWARE DIMENSIONS*

Accounting Plus*	
8 Module	3960
7 Module	3465
6 Module	2970
5 Module	2475
4 Module	1980
3 Module	1485
2 Module	990
1 Module	495

*Signifies manufacturers trademarks and copyrighted products

*All manufacturer s license and copyrights must be observed

Prices are for prepaid orders only and reflect a cash savings. send a cashier check or money order. Charge card orders are slightly higher. All items subject to availability and prices subject to change without notice

When in Dallas, visit our showroom 10 minutes from downtown.

IBM* P.C. Software

214/526-3292

Your Business Software
MICRO SOFTWARE & ACCESSORIES
6211 OAK LAWN DALLAS TEXAS 75235 214 526-3292

Your Business Software Your Business Software Your Business Software Your Business Software

Figure 1 Command Menu

```
VOLKSWRITER EDITOR - CHOOSE AMONG THE FOLLOWING COMMANDS
D - DISPLAY ALL FILES      S - STORE FILE ON DISK     N - RENAME FILE      P - PRINT
R - RETRIEVE DISK FILE     F - FORMAT SELECTION       Z - DELETE FILE      X - EXIT
E - EDIT CONTENTS          C - CLEAR & START OVER                          H - HELP
            YOUR CHOICE:
            ENTER DRIVE: A
            DIRECTORY FOR DRIVE A
PWPWPWPW.PWP     WN2.BAT        WV1.BAT        WV2.BAT        WN1.BAT
VW.BAT           AUTOEXEC.BAT   VW.FMT         VW1.EXE        VW2.EXE
TUTORIAL         TUTOR2         TUTOR3         DATE.COM       COMMAND.COM
```

Figure 2 Function Key Reference Guide

```
     KEY: F1    F2     F3      F4    F5     F6     F7     F8       F9       F10
BY ITSELF:HELP  FILE  +LINE  -WORD  BLOCK  BLOCK  FIND   REFORM  TAB/MARG  RESET
 WITH ALT:PRINT FILE  +PAGE  -LINE  MOVE   COPY   REPL   -BLOCK  CENTER    EXIT
```

This tutorial shows you how to use the Volkswriter editor. Notice the blinking line, called the CURSOR, on the upper left-hand corner of your screen. The cursor shows where within your text you are.

To do anything, you must first move the cursor to the appropriate place in your text and then carry out your action. It is therefore important to know how to move the cursor. Look at the numeric keypad on the right side of the keyboard, which looks like the figure to your right. Besides a number, each key has an arrow or a word printed on it. These are called the cursor control keys and they are used to move the cursor around the screen.

To begin, press the key, and see what happens. The cursor should have moved down one line. If you see a "1" instead, press the "Num Lock" key, on the upper right of the keyboard and try again.

```
7 8 9
4 5 6
1 2 3
```

ded "dot" command such as ..LH.FMT. You should certainly devote an afternoon to devising personalized format files and then store them on a program disk for instant use.

Now for my major disappointment with *Volkswriter*: There's no provision for printing headers or footers on each printed page. The print routine can be instructed to number each page automatically (centered on a specified line), but that's all. When I first started using the program, I figured, "Oh well, I'll just forget about the headers," but I've repeatedly run into writing applications that required at least one available running head. I'm not using *VW* to write this article, partly because it won't let me print "PC/*Volkswriter* Review" at the top of each page.

A minor inconvenience is that you can't proceed directly from full-feature editing to printing a document. *Volkswriter* is actually two separate programs. VW1.EXE contains all the editing features described but can't print files. VW2.EXE contains the printer driver and minor editing features but does not afford the block move and find and replace functions.

These two parallel programs are connected via batch files that call each other, so that when you exit one, you are sent to the other. This happens automatically, but in the process you have to wait while the companion program is loaded from drive A:, and you must manually reload into memory the file you were editing. This takes an eternity of about 10 seconds and a great deal of concentration. It can be more than moderately bothersome, especially once you've been spoiled by the exceptional speed of other *VW* functions.

The reason for this inconvenience is that if both the editing and printing features were combined into one program, there would be no room in memory for text with a 64K system. As it is, VW2.EXE

doesn't leave much room for text. According to Wilson, IBM Pascal provides no method for chaining programs and passing parameters.

There is, however, no limit to the total length of a final printed document with *Volkswriter*. *VW* offers a ..PRINT command similar to the embedded ..FORMAT command that can call up and print another text file from disk while printing a document. This lets you include "boilerplate" paragraphs from separate files during a print routine.

You can even create a command file with just ..FORMAT and ..PRINT instructions. It will print a series of separate disk files as a composite document. There's also a ..PAUSE instruction that enables you to change disks during these chained printing operations. This system of independent formatting and printing commands offers great versatility in the creation of long documents or specialized print formatting that largely compensates for the lack of on-screen formatting options.

VW supports the essential features of IBM's matrix printer and the NEC Spinwriter series printers as well as other printers, both parallel and serial. Underlining is accomplished by letting you create supplemental lines of text that terminate with a carriage return and no line feed. As with any word processor/printer interface, you should personally test the printer you plan on using to see how well the program supports it.

VW allows you to insert forced page breaks within a text file, and there is a provision for printing a file to the screen so you can preview print formatting and page breaks. Unfortunately, you can't insert or adjust page breaks while previewing.

IF I NEEDED to have a novice using a word processor within an hour, Volkswriter would be my choice.

The printing portion of the program consists of some extremely versatile features with a few glaring omissions. When printing, *Volkswriter* reminds me of those Volkswagen models that could go anywhere but didn't have trunk locks.

File Management

In the area of file management *Volkswriter* shows itself to be the trusty, reliable Beetle of word processors for several reasons. One is that *VW* reads and writes truly standard DOS files of ASCII

Figure 3 Format Selection

```
IM FORMAT SELECTION

                              U-USE THIS FORMAT      R-RETRIEVE STORED FORMAT
ENTER CHOICE:                 M-MODIFY THIS FORMAT   S-STORE FORMAT FOR LATER USE
          CURRENT FORMAT
PRINTER TYPE (1=IBM/2=NEC/3=OTHER)        :2
RESET TOP OF FORM (Y/N)                   :Y
   PAGINATION (Y/N)                       :Y
   FIRST TEXT LINE                        :6
   LAST TEXT LINE                         :60
   PAGE #'S (Y/N)                         :Y
   PAGE #'S ON LINE                       :63
   STARTING PAGE NUMBER                   :1
EXTRA SPACING BETWEEN LINES               :0
LEFT MARGIN                               :16
LEFT AND RIGHT JUSTIFICATION              :N
CONTINUOUS FORMS (Y/N)                    :Y
LINES / PAGE (2-255)                      :66
LINES / INCH (6/8)                        :6
HORIZONTAL MOTION INDEX                   :9
```


ITS

INTERACTIVE TUTORIAL SYSTEMS

SOLVES YOUR TRAINING PROBLEMS

with a series of advanced tutorials designed to be the standard of the industry.

Order our first instructional module **"Principles of the IBM PC and Computer Programming"** at special introductory prices.

This initial lesson will train your secondary users — family, friends and employees — to develop an understanding of processing data using the IBM PC. To include: basic processing cycles, hardware, software, data and file formats. ITS will provide the beginner with the concepts and vocabulary necessary to communicate with the data processor.

ITS self-contained training systems are designed and written by educators active in state-of-the-art DP training.

This phase comes complete on one 320KB diskette at the **introductory price of $29.99** 160KB versions — 2 diskettes $39.95

Write for course descriptions on the following advanced tutorials:

1. IBM PC Instruction Set
2. IBM PC Disc Operating System and MACRO assembler
3. Structured Programming
4. Advanced Structured Programming
5. System Analysis and Design
6. Complete System — All 5 modules

ITS

INTERACTIVE TUTORIAL SYSTEMS

1266 Soldiers Field Rd., Boston, Mass. 02135

to order call toll free
1-800-334-0854, ext. 870
North Carolina residents
call collect **1-617-783-3187**
we honor Mastercard/Visa
or mail coupon below

Please send me ___ 320 KB ☐ 160 KB ☐
(Add $2 for postage & handling, plus 5% sales tax if Mass. resident.)

Enclosed is my check or money order for
$ _____

Please charge to my
VISA card # _____ "Good Thru" _____
MasterCard # _____ "Good Thru" _____
NAME _____
STREET _____
CITY _____
STATE _____ ZIP _____

I am interested in more information on course # _____

characters. Other word processing programs make that claim, but upon examination their text files contain special headers or formatting codes that require conversion of their text files before they can be edited (*EasyWriter* version 1.10, for example). Other programs offer the creation of unembellished DOS files as an option but don't provide reformatting and word wrapping in DOS mode (*WordStar*, for example).

Volkswriter text files consist of lines of ASCII characters, each terminated by a carriage return and line feed (ASCII 13 and 10). The end of a file is marked by a Control-Z (ASCII 26). This is the same convention used by DOS when creating a file with the COPY CON: command or with EDLIN. Technical explanations aside, the bottom line is that *VW* is a welcome replacement for EDLIN in most circumstances and the perfect tool for creating batch files, Pascal programs, and data files read by BASIC.

The *VW* manual also claims that *VisiCalc* print files can be read and inserted into text being edited with *VW*. Although I have not tested this, I have tried using *VW* to perform search and replace operations on BASIC programs, with unsatisfactory results.

You will encounter only two nonstandard characters in a *VW*-created file. If you're making use of paragraph reforming, the end of each paragraph will contain a Control-T (ASCII 20). There is an optional command for dispensing with reformatting, thereby eliminating insertion of the Control-Ts. If you've made use of underlining, you'll have extra lines that terminate with a carriage return. Because of this standardization, I've frequently used *VW* to create messages I wanted to post on network bulletin boards and for composing files to be read by BASIC programs. I write the file with the regular reformatting feature in effect. When the document is in final form, I do a global replacement of each Control-T with " " (no character), which strips the Control-Ts.

VW provides a very limited ability to deal with lines of text exceeding 80 characters. You cannot write files with lines longer than 80 characters. You can read in an ASCII file created by another program with lines of up to 254 characters in length, but the screen will display only the first 80 characters of each line. If you reform the file, the invisible lines can be brought into view, but you still can't expand the file past the 80-character-per-line limit. The major impact of these limitations becomes apparent when you try to edit a BASIC file with multiple statements on lines longer than 80 characters. It's just not practical to use *VW* for this purpose.

VW's file management operation is a "name it later" system. You can edit a file first and give it a name when you're finished and are ready to store it. You can store the file under its previous name (if any) or give it another name (including a different drive designation). These filenaming options are complemented by both *VW*'s ability to read another disk file into the file presently being edited and its capacity for marking a portion of the file being edited and writing it as a separate disk file. If you make creative use of these functions, you have maximum flexibility

Rams & Much Much More!

for IBM Personal Computer

PACK-RAM™ **$225.00 & up**

* Increase system memory up to 256KB.
* Parity generation and checking.
* Sockets provided for user up-grades.

PACK-COMBO™ **$175.00 & up**

* Combination of RS232 serial port, a battery backed up real time clock and an optional parrallel printer port.

PACK-RAM + COMBO™ **$435.00 & up**

* Combination of PACK-RAM™ and PACK-COMBO™ on a single card for space savings.

PACK-COMM™ **$495.00**

* It will transform the PC into a Voice & Data Communication terminal even without operator's attention.
* Bell 103J compatible modem is optionally integrated on the card with auto answer & auto-dial capability.

PACK-HDK™ **$1,795.00**

* Externally provided 5 Mega Byte formated on line storage of either fixed disk or removable cartrige disk.
* Internal mounting models also available.
* Compatible to either PC-DOS or CP/M-86 operating systems.

All products use one card slot, burn-in tested, and carries 1 year warranty.



PERSONAL DATA SYSTEMS

1110 Wrigley Way • Milpitas • California 95035

(408) 262-7880 • (408) 947-4647

Marketing & Office Hrs. Order Entry: 8 a.m. - 5 p.m.

After Hours: 7 a.m. - 8 a.m. & Sat.

for moving files among your disks and within your system.

You can also rename or delete files from within the program's file command menu. The one operation not provided is concatenation of files; to accomplish that, you have to exit to DOS (version 1.10). *VW* does not automatically create backup files.

VW is close to being catastrophe-proof. Through a comprehensive system of warnings and error messages, you're virtually prevented from accidentally abandoning a file without having saved it to disk, or from running out of memory or not been saved.

Occasionally, when invoking a format file, for example, you are required to enter a file name but have no way of seeing the files on disk for reference. By the time you've exited to the file directory and returned to the format selection prompt, you may have forgotten whether it's LH.FMT, LTR.FMT, or LTRHD.FMT and may need to go back to the directory for another look.

I've also found that working through the various print and format selection menus seems to take more steps than should be necessary. This is the one place in the program where the gears don't seem to shift smoothly.

I prefer buffered commands, as offered by many other word processing programs. When you type R to retrieve a file, you have to wait a moment for the WHICH FILE: prompt, then enter your file name and wait for the file to be loaded from disk, then enter E at the YOUR CHOICE: prompt to edit. It would be wonderful to be able to type R MYFILE <ENTER> E in one swoop. No matter that the required wait takes less time than it used to take to load a sheet of paper into a typewriter. The

YOU SHOULD personally test the printer you plan on using to see how well the program supports it.

disk space. Although veteran users might wish to bypass these "seatbelt" routines, they certainly make sense for novice word processing writers and even for complacent vets.

Efficiency

All the parts of this program are generally well integrated. Finding your way within the program is fairly easy, and the various work modes (editing, printing, filing) connect logically. One of the few rough spots, however, is the demarcation between the editing and printing modes previously noted.

A few hints for dealing with editing/printing transitions: You can enter either the editing or printing portion of the program directly by giving the commands VW1 or VW2, but upon exiting you will not be sent to the other program mode. As explained in the manual, you can rewrite *VW*'s batch files so the program takes you into the printing mode first. Just substitute WV2.BAT as the last command in the AUTOEXEC.BAT file on the program disk. The manual does not explain that you can exit directly to DOS by typing [Ctrl]-2 from the main command menus. Be careful, though, as you will lose any files that have



Introducing Spinnaker. We make learning fun.



© Spinnaker Software Corp., Cambridge, MA 1982

At Spinnaker Software, we make educational games that are actually fun.

Because they're fun, your children will use them. Instead of letting them collect dust in the basement.

And because your children use them, they'll be learning. And after all, isn't that what educational games are all about?

Our games are educational, because you can't kid parents.

As a parent, you're probably very concerned with how much time your kids spend playing mindless video games.

Sure, they're fun. But they don't do much more than develop reflexes and hand-eye coordination. Spinnaker games are different.

All our games have true educational value. They help develop a child's learning skills. And that's something your kids can take with them wherever they go.



Our games are fun, because you can't kid kids.

Kids like Spinnaker games for the same reasons they like roller coasters, going to the beach and ice cream sundaes.

They're fun. Lots of fun. So much fun your kids will probably forget they're learning.

Our games make the computer screen come to life. With colorful graphics, animation and sound.

And they're easy to use. In fact, a lot of our games are easy enough for kids who've never even used a computer before.

How do we make our games both educational and fun?

We're glad you asked.

Educators and game programmers write our software.

Educators, because they've been in the classroom and know how children learn. And what it takes to keep their interest.

Game programmers, because they know how to have fun with computers. These programmers give our games the high resolution graphics, animation and sound that make them so entertaining.

And right now, we're introducing four new games that can be played on the most popular computers, Apple,® Atari,® and IBM.®

First, there's FACEMAKER. It's for young computer users, kids ages 4-8. FACEMAKER helps children improve memory and concentration and provides familiarity with the computer.

Another game for young users is STORY MACHINE. This game lets children ages 5-9 write their own stories and see them acted out on the screen. STORY MACHINE helps children learn to write correctly and acquaints them with the keyboard.

Our SNOOPER TROOPS™ detective series gives your child mysteries to solve. As a Snooper Trooper, your child will have to do some daring detective work, including crawling through dark houses and talking to mysterious agents.

Designed for kids ages 10 and older, SNOOPER TROOPS helps children learn to take notes, draw maps, classify information, and develops vocabulary and reasoning skills.

All four games are available in stores today.

With Spinnaker products, you can rest easy knowing your children are spending their time wisely.

So ask your retailer about the growing line of Spinnaker games.

Because one of the smartest things parents can do is help their children learn.

SPINNAKER™

We make learning fun.



THE SOLUTION IS IN THE VISISERIES.

No matter what kind of problems you're trying to solve with an IBM Personal Computer, there's a program in the ever-expanding IBM VisiSeries™ line that will give you the solution. Faster, better, smarter.

Take our IBM VisiCalc® program. It's #1 in the business. Because it takes the work out of working with business numbers. The IBM VisiCalc program is the powerful "electronic worksheet" that speeds planning and budgeting. You can ask "what if?" and see the answers immediately. So you can analyze the impact of decisions before you make them.

Our IBM VisiTrend/Plot™ program makes it easy to analyze data and see the results in easy-to-understand charts and graphs.

With our IBM VisiFile™ program you can organize, maintain and more effectively use the information your business needs.

Is a lot of your workday taken up with scheduling projects and estimating costs? Our IBM VisiSchedule™ program will help you do it better, with a lot less work.

And for helping you manage your valuable time, organize your personal information, nothing could be of more value than our IBM VisiDex® program.

Our IBM VisiCalc Business Forecasting Model™ package will give you vital financial information about your business.

And our IBM Desktop/Plan™ program will speed and automate all your financial and business planning.

Put the IBM VisiSeries programs to work on your IBM Personal Computer. Do it by December 31, 1982 and get three programs for the price of two!

Get all the details from your VisiCorp retail computer dealer. Or write Customer Services, VisiCorp, 2895 Zanker Road, San Jose, CA 95134.

THE IBM VISISERIES FROM VISICORP™
PERSONAL SOFTWARE™



© 1982 VisiCorp. IBM is a trademark of International Business Machines Corporation

computer age makes one increasingly impatient with such delays.

Outstanding Features/ Impediments

VW's noteworthy features have already been elaborated: ease of use, speed and performance, and file versatility. Another outstanding feature is that it works. This program is not going to veer off and leave you in a ditch. You can count on that.

Volkswriter's primary impediment is that it's supplied on a copy-protected disk. With double-sided drives available for the PC, and electronic and hard disks becoming more commonplace and affordable, *VW*'s copy protection feature renders the program incapable of being integrated within a larger computer system. The present copy protection schemes are just not compatible with the state of microcomputer technology. This judgment is based on purely practical rather than economic or moral considerations. The only real solution is for users to encourage software producers to offer unprotected programs by paying for the ones that they use.

Aesthetics

This program looks good. The menus are informative, attractive, and are not intrusive. The prompts are helpful and friendly, if a bit colloquial. *VW* beeps at you when it needs to, but not gratuitously.

I'd rate *VW* a perfect 10 in terms of aesthetics, were it not for the razzle-dazzle start-up display that performs micropyrotechnics to proclaim "Welcome to your *Volkswriter*." I was amused the first few times, but when I'm in the mood to write, I'd rather get down to business. Once into the program, however, *VW* has style.

Best Use

Some of the best uses of *VW* have been touched on in the course of this review. Its streamlined and speedy operation make it ideal for general correspondence. If you have more than 64K of memory, *VW* is a good tool for producing longer manuscripts. The paucity of print formatting options limits its usefulness in preparing complicated documents.

The DOS file compatibility makes this program a fine general-purpose system and program editor if you have more than 64K. The availability of the full PC character set makes *VW* useful for foreign language or special programming language applications. The simplicity and reliability of operation make *VW* a very good introductory word processor.

It's tempting to conclude by affirming that *Volkswriter* is like a Beetle. At the risk of overextending the metaphor, I feel that the program is a bit sportier than a Beetle. Perhaps it's closer to an MG convertible. Regardless, there's no doubt that *Volkswriter* would fit well in the family garage (one- or two-car), and that you can count on it to get you around town while providing some fun to boot. **/PC**

Comp Case

IS THE PERFECT GIFT FOR THE COMPUTER THAT HAS EVERYTHING



Your investment in a computer is long term. You expect many years of reliable service. Comp Case protects your investment when not in use or while transporting it from office or home. Your computer never leaves the case — you simply remove the lid, make the electrical connection, and operate. Comp Cases are available for most brands of computers and peripherals.

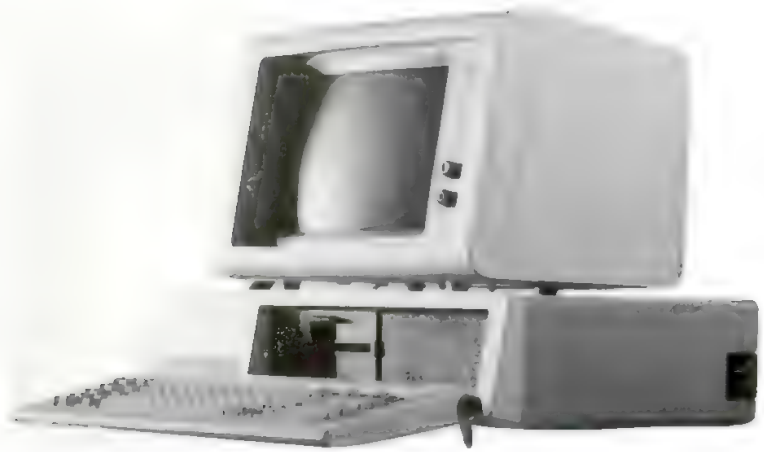
Comp Case is the perfect Christmas gift. Comp Cases are available in better computer stores in our area. Or call 800-848-7548 direct to receive your Comp Case in time for Christmas.

Computer Case Company

COMPUTER CASE COMPANY • 5650 INDIAN MOUND COURT • COLUMBUS, OHIO 43213

ARE YOU READY for more indepth, technical information about the IBM Personal Computer?

The editors of *PC* announce the definitive technical journal for the IBM PC and IBM PC compatible machines.



PC Technical Journal

Programmers, engineers, hobbyists, and people interested in the PC market: Are you hungry for more indepth information? Now you can supplement your monthly issue of *PC* with our new, meaty technical journal.

Starting Quarterly
Charter Issue: March 1983

CHARTER SUBSCRIPTION SPECIAL: Subscribe to ***PC Technical Journal*** before January 15, 1983 for only $12 and save 40% off the $5 cover price.

Yes, I am hungry for more PC technical information! Please sign me up as a charter subscriber to the *PC Technical Journal* at the special rate (offer expires January 15, 1983).

Name _____

Address _____

City/State/Zip _____

4 issues $12 **Canada $16** **Foreign $22**

☐ Payment Enclosed ☐ Visa ☐ MasterCard ☐ Bill me

Charge card # _____

Interbank # _____ Expires _____

Signature _____

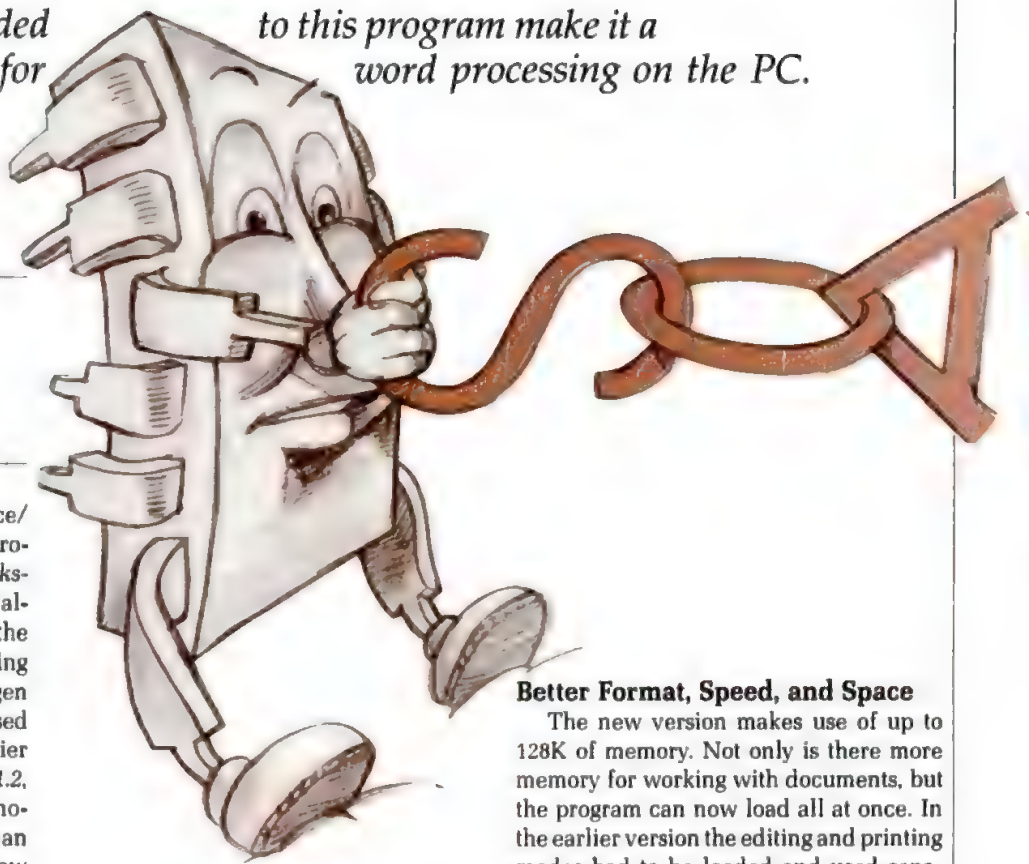
Toll-free order phones: In California **(800) 792-0990, X1136**
All other states **(800) 227-3800, X1136**

Tips on interfacing with the PC bus — A look at operating systems — Construction projects such as building your own circuit boards and miscellaneous PC-related peripherals — User library of public domain software — Interviews with system designers and programmers — Evaluations of software publishers, their terms, what kinds of software they look for, and their track records — *PC* style guide to user-friendly software — Standards related to telecommunications, disks, and other areas — How independent software authors and startup companies get their products into ComputerLand PC dealers — Survey of best-selling hardware and software products — Guest columns on copy protection and reader reaction — Profiles of companies advancing PC technology — Programmer's guide to the PC ROM — Writing advanced graphics routines — Tips from the PC technical tutor — Using coprocessors such as the 8087 and 8089; can you piggyback them? — Converting 8-bit to 16-bit — Writing documentation — Reports gleaned from IBM technical newsletters — PC robotics and industrial applications — PC imaging — Building super PCs with lots of bells and whistles — Service tips related to repair and preventive maintenance — The exclusive *PC Technical Notebook* complete with sketches, diagrams and how-to charts — Plus much more.

SOFTWARE/NEIL ZACHARY

The 1982 Volkswriter

The finishing touches added to this program make it a perfect pleasure vehicle for word processing on the PC.



Volkswriter 1.2
Lifetree Software
177 Webster St.
Monterey, CA 93940
(408)659-5531
List Price: $195

Volkswriter always had the best price/performance ratio of any of the word processors around. This is because *Volkswriter*'s author, Camilo Wilson, has always intended to sell his program to the bottom 80 percent of the word processing market. And like the popular Volkswagen of the auto industry that has progressed from the standard Beetle to the sportier Rabbit, the new version, *Volkswriter 1.2*, has major changes and deserves to be notated in a more auspicious way than as an update of 1.0 to 1.2. *Volkswriter* now leaves little to be desired. Current users may get this update for only $20. Furthermore, *Volkswriter* is no longer copy protected. The user can make backup floppy disk copies or copy onto either a hard or an electronic disk.

Improved Etiquette and Performance

Volkswriter 1.2 is even more user-friendly than *Volkswriter 1.0*. For example, when an error is made, *Volkswriter* now says on the status line "Beg your pardon," instead of the previous "Sorry, but how." Many word processors with their cumbersome manuals are difficult to master, but the computer-aided instruction of *Volkswriter 1.2* makes learning a breeze. The manual, improved with high-quality type, and the on-screen, self-contained tutorial enable the user to become fairly proficient in under 2 hours.

Volkswriter was the first word processing program written specifically for the PC. Any program written specifically for a given computer is normally superior to one transferred from another system since it can take full advantage of the inherent capabilities of the specific hardware configuration. The original PC version of *WordStar* did not use the function keys. *Volkswriter* utilizes them to great advantage. Wilson not only included the ten commands of the function keys, but also combined the Alt key and the function keys to create an additional ten commands. You need only a few keystrokes to perform any desired function.

Volkswriter can be used in conjunction with Edlin, BASIC, Pascal, Macro Assembler, *VisiCalc*, *SuperCalc*, *dBaseII*, *Spellguard*, and *Easyspeller*. Applications programs can be printed out as files with word processing under the command of *Volkswriter*. This is a great feature if you are writing a letter or report and want to include part of an electronic spreadsheet in the text.

Better Format, Speed, and Space

The new version makes use of up to 128K of memory. Not only is there more memory for working with documents, but the program can now load all at once. In the earlier version the editing and printing modes had to be loaded and used separately. Now both modes load into memory as soon as the PC is turned on. The speed of the program has added to its already excellent price/performance value. Now when you buy *Volkswriter*, you get a 64K version and a 128K version.

The primary format is also automatically loaded as soon as the PC is turned on, further increasing the speed of *Volkswriter*. This customizable format includes tab settings, margins, and printing parameters, as well as those features that are unique for a particular printer. The printing instructions include pagination preferences, the amount of spacing between lines, and the number of lines to a page. You can now use many different formats for specific types of word processing that will load automatically when calling for a file with the specified format. If you were writing a script, for example, you would create a format called FMT.SC. When you call up files Scene1.SC, Scene2.SC, etc., each of these print automatically with the

correct format. This feature eliminates the tedious task of specifying the parameters of the format each time they are used.

Wilson has added column and line numbers to the status line. The status line, the highlighted area at the bottom of the screen, tells you which disk drive and file you are working on. Other commands, such as Find and Replace, are displayed on the status line. The percentage of available memory is also displayed. *Volkswriter* is easier to use now that column and line numbers have been added. Previously, you had to count manually to find a tab stop. Column numbers are helpful in setting up indented columns, gauging the number of completed pages, and knowing your position relative to left and right margins. However, *Volkswriter* still does not have the Spellbinder feature that enables you to use the command mode to go backwards and forwards to any given line number.

Setting the right margin to 80 disables the word wrap feature. This is advantageous for programming, as no automatic reformat will occur when the end of the line is reached.

Biography of an Entrepreneur

The making of a successful inventor.

Mild-mannered Camilo Wilson is an example of the entrepreneur in development. His word processing program, *Volkswriter*, has sold several thousand copies since it entered the marketplace 7 months ago.

Wilson was born and raised in Santiago, Chile. He came to the United States when he started high school in Oakland, California. This is where he was first exposed to computers. The summer before starting college at the University of California, Berkeley, he received a National Science Foundation scholarship.

For 7 years Wilson worked at the Survey Research Center doing relational data base analysis on large mainframe computers about equal in computing power to today's PC. He developed his first word processor because he did not own a typewriter but had access to computers at the center. His data base experience got him consulting jobs in educational institutions with the Ford Foundation in South America. From 1972 to 1976 he left the world of computers to work for the Arica Institute, which was part of the human potential movement. It tried to integrate individual freedom with social responsibility.

When Wilson left Arica, he had worked his way up to the board of directors. He reentered computing as a consultant to Wall Street firms on the development of software systems. His work in mainframe financial applications included clients such as Chemical Bank, Blue Cross, Blue Shield, and American Express.

Wilson moved to San Francisco 11 years ago to work for Crocker Bank on telecommunications order entry systems. He started teaching data processing at Golden Gate University and Wells Fargo Bank. His teaching career was curtailed when he got involved with the PC. He signed a contract to write a book on the IBM PC and received one of the first PCs in California. As he started to write the book with *EasyWriter*, it was apparent to him that he had to improve the word processing capabilities of the PC. The book never got written, but *Volkswriter* was born. Now Wilson has put his expertise to work on a CP/M-86 version. —*N.Z.*

New Design Features

Volkswriter 1.2 has newly designed tab features. Capital tab gives you an indented tab that will act as the current left margin until you press the Return key. After Return, you are back to using the original left margin. The creation of a temporary left margin is extremely handy in doing any kind of outline material. Using capital tab and the insert mode in conjunction has the advantage of creating a unique format that will type two lines, the first of which is indented according to the tab stop. There is a space of approximately four lines before it prints an additional two lines.

The page break can be set where you want it. Your text will not be broken in an awkward manner by use of this conditional page break. If you want the next six lines printed together, *Volkswriter* will break before or after these six lines but not in the middle of them. This feature is desirable if you want to have pages arranged according to paragraphs or sections with titles. It is especially helpful in the preparation of lengthy reports.

Volkswriter now has headers and footers that can be set on the left, right, or center of the page. Page numbers may be at the top or the bottom. You may alternate page numbers with even on the right side of the page and odd on the left. The page number may be printed between dashes. The number 1 is no longer printed automatically unless it is requested. These are some very useful features, especially for an author.

A new command, Verbatim, permits full use of all the special characters on many printers, such as the Epson MX-100, as well as all potential graphics and foreign language symbols. All you need to do is use Ctrl and type the ASCII number. Another new printing capability provides superscripts and subscripts, which are especially useful in printing formulas and equations.

Printing Support and Insert Mode

Volkswriter now comes with support for nine different printers. Wilson has made the commitment to support any printer if you send him a copy of your printer's manual. I think his is the only software company that gives this important support for word processing.

The insert mode is improved because a small graphic symbol no longer resides on the status line. You know when you are in the Insert mode because the cursor is no longer a little dash, but a solid square. The high visibility of the solid-insert cursor is useful when scrolling through the text to locate a particular word or phrase. *Volkswriter* still does not have true proportional spacing. The only advantages *WordStar* has are horizontal scrolling with lines more than 80 characters in length and showing page breaks on the screen.

The *Volkswriter 1.2* has many convenience features. It has gained speed by not having to load from disk when switching from the Edit to Print modes. The features of this update make *Volkswriter* even more useful. ***/PC***

Neil Zachary is a director of cinematography in Hollywood, California. He is also president of the IBM User Group of California and has incorporated information from user group members in his Volkswriter review.

NEC's new letter-quality printer gets personal with IBM.

The Spinwriter™ 3550 lets the IBM PC get down to business.
NEC's new Spinwriter letter-quality printer is the *only* one plug-compatible with the IBM Personal Computer. So you get the business applications you've been wishing for. Letter-quality output for word and data processing. Multi-language, scientific, and technical printing. Simple forms handling. Quiet operation. And the reliability of the industry's most popular printer line.

NEC designed the new Spinwriter especially for the IBM PC. It comes complete with documentation and training materials to fit your PC user's handbook. Just plug the Spinwriter in and your PC instantly becomes more versatile and flexible.

More than 8 forms handlers and 50 print thimbles boost PC versatility.
NEC designed the Spinwriter's 8 modular forms handlers to accommodate a wide range of paper and document sizes and types. The easily mounted handlers let your computer print out the forms you need for data processing, word processing, graphics, accounting or other business applications.

The Spinwriter's 50 print thimbles can more than triple your PC's usefulness. They come in both constant pitch and proportional-spaced fonts, plus in foreign language, technical and scientific versions. They snap in and out in seconds, and let you print up to 203 columns on 16-inch paper. They each last for more than 30 million impressions.

This printer's special features make everything look better on paper.
The Spinwriter's software-invoked features include automatic proportional spacing; bidirectional, bold and shadow printing; justification; centering; underscoring; and sub/super scripting, all at speeds up to 350 words per minute.

That big extra, Spinwriter reliability.
Spinwriters have the industry's best mean-time-between-failure rating, in excess of 3,000 hours. In terms of average personal computer usage, that's more than five years.

The Spinwriter 3550 is available at **Computerland** stores, **Sears Business Systems Centers** and **IBM Product Centers** nationwide.

NEC Information Systems, Inc.
5 Militia Drive, Lexington, MA 02173

Send me more information on the Spinwriter 3550.

Name

Title Telephone

Company

Address

City State Zip

1182

NEC

NEC Information Systems, Inc.

Spinwriter is a trademark of Nippon Electric Co., Ltd



WESTICO – The Software Express Service that really delivers:

IBM PC SOFTWARE

16 Bit software for IBM PC, Victor 9000, CP/M-86 and MSDOS.

Westico has good news for owners of the new 16 bit microcomputers — a full selection of quality software. Programs for businesses, professionals, and software developers. Westico can provide its CP/M-80 programs for "Baby Blue" and similar 8 bit hardware options. And there's more good news. We deliver more than quality software fast. We deliver Westico. That means you receive Westico's outstanding technical support and expertise when you need it.

MicroGANTT — Sophisticated project planning system which uses Critical Path Method analysis. Visually oriented system makes it easy to interactively define task and project parameters. Budget costs and work hours are also calculated and displayed. Percentage allocation of resources to tasks and partial completion of tasks on the critical path are other features. $395/$25.

STATPAK — Statistics software library in Microsoft BASIC designed to give users an effective alternative to timesharing. Performs probability calculations, independent variable statistics, discrete & continuous distribution functions, regression analysis, means testing, survey data/contingency tables and more. Includes plotting and data management. $500/$40.

MINIMODEL — Does big financial planning jobs at micro prices for cash flow projections, financial forecasting, venture analysis, and risk analysis. Model limited to 32,000 by 32,000 cells. Report content and format totally under user control. $495/$50.

VERDICT — For law offices with up to 25 attorneys and a total of 35 timekeepers (including paralegals, secretaries, etc.). All time and expenses are distributed to client or other designated overhead accounts. Analysis of billings, aging of receivables, and analysis of each timekeeper's work effort. Produces monthly client review sheets and ready to mail itemized bills. $750/$40.

BILLKEEPER — For professional offices — architects, accountants, engineers, consultants, ad agencies — with all of the features of VERDICT. $750/$40.

MICRO-TAX — Accepts information, summarizes data, computes tax, and prints returns required by the Internal Revenue Service. LEVEL 1 for individuals produces 14 schedules and forms. $195. LEVEL 2 for professionals produces 33 schedules and forms. Includes depreciation, state tax interface, integrated data base for year to year data storage. $1000. LEVEL 3 is a Partnership & Corporate package which produces 19 schedules and forms. $1000.

POSTMASTER — Mailing list system to maintain name and address files. Produces everything from mailing labels to customized letters. $150/$25.

FINALWORD — Full screen interactive word processor with tables of contents, automatic indexes, simultaneous printing and editing. $300/$40.

ASCOM — For telecommunications between micros or micro to main frame. Easy to use full menu mode or expert command mode. Built-in commands for auto-dialing modems and tables for character translation, and suppression. Remote mode for controlling other micros. $175/$25.

C86 — C language compiler for 8088/8086 machines. $250/$25.

CBASIC/86 — Standard microcomputer BASIC language. $325/$30.

JANUS/ADA — Compiler for useful subset of ADA language. $400/$25.

PASCAL/MT+86 — Compiler generates machine language. $800/$30.

SID-86 — Symbolic debugging tool for CP/M-86. $150/$15.

EM80/86 — Emulates execution of CP/M-80 programs. $100/$10.

UT-86 — Utility programs for PC DOS and MS DOS. $195/$25.

The Westico 24-Hour Computer Hotline for 300 baud modems (203) 853-0816 for detailed information and quick access ordering.



•Westico has more than 250 programs that work on a wide variety of microcomputers including ADDS Multivision, Altos, CPT, Cromemco, DEC, Dynabyte, Eagle, Exxon, Facit, Hewlett-Packard, IBM, Intertec, Kaycomp, Monroe, NEC, North Star, Northern Telecom, Ohio Scientific, Otrona Attache, Radio Shack, Sirius, Televideo, Vector Graphic, Victor, Xerox, Zenith. We're working hard to be your software company.

4 Ways to order

- **Write** Westico, Inc., 25 Van Zant Street, Norwalk, CT 06855.
- **Call** (203) 853-6880.
- **Telex** 643-788
- **Dial-up** our 24-hour computer (300 baud) (203) 853-0816.

COD, MasterCard and VISA accepted.

Prices do not include shipping and are subject to change. In CT add 7½% sales tax. All sales final.

Manual price may be credited toward purchase of software.

Dealer inquiries invited.

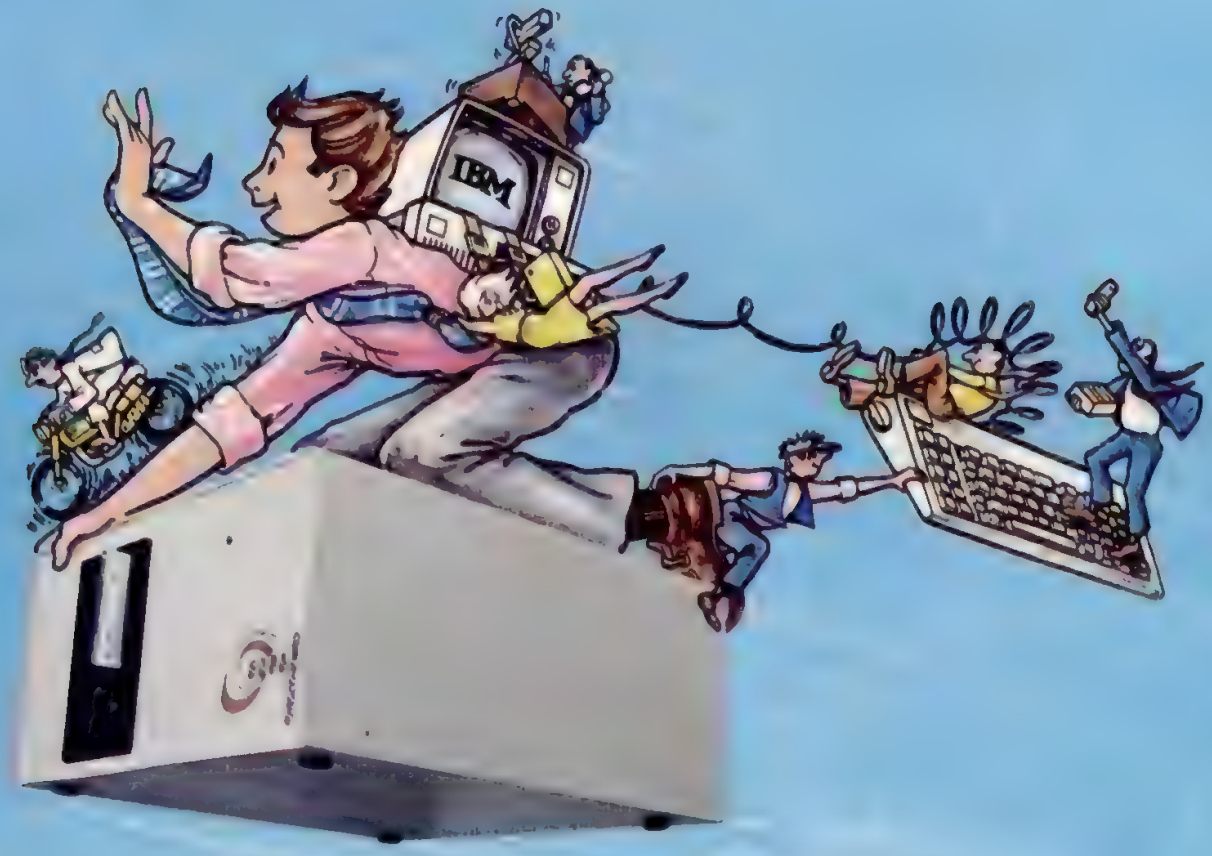
WES-57

Copyright © 1982 Westico, Inc.

Call for FREE catalog.

WESTICO
The Software Express Service
25 Van Zant Street • Norwalk, Connecticut 06855
(203) 853-6880 • Telex 643-788

Performance Breakthrough...



...the CYBERDRIVE™ for the IBM Personal Computer

13.5 or 27 million bytes of disk capacity in a single cabinet with an integrated mini-cartridge tape for secure data backup.

Setting an exciting new microcomputer standard, the CYBERDRIVE[1] combines a full package of features.

It offers new, higher performance levels, with an integrated business-oriented backup device.

As the **CYBERDRIVE** is made available for other systems, media transfer is assured regardless of the host hardware or Operating System.

The CYBERDRIVE slashes the seek time dramatically—e.g. the usual 5 Megabyte stepper-motor Winchester disk offers average seek time typically in the range of 100 to 200 milliseconds (incl. head settling).

With the **CYBERDRIVE,** the average seek time across more than five times as much data is only 33 milliseconds (incl. head settling).

This basic speed, coupled with disk cache buffering and a peak transfer rate of 1 million bytes per second, make the CYBERDRIVE a performance champ!

The integrated mini-cartridge tapes used for backup of data allow dumping of (for example) 10 million bytes of data in about 10 minutes... much faster than other tape or floppy disk backup techniques. Hardware read-after-write error checking is incorporated in the tape device.

...And don't fail to ask about our superb lineup of serious business software (also offered in **CYBERDRIVE** format) including:

RM/COBOL[2] compiler-the micro industry standard.

MBSI[3] **RM/COBOL** general business applications (derived from **MCBA**[4] minicomputer packages)... thousands in use... money back guarantee... source program license.

CRT![1] from Cybernetics (COBOL Reprogramming Tool!)- Program generator for **RM/COBOL** to ease program development and maintenance . . . an alternative to a Data Base System.

CBASIC2[6] **& CBASIC86**[5] compilers... for aficionados of a useful BASIC.

The software is available on a variety of industry-standard Operating Systems including CP/M[5]-MP/M[5] (both -80 & -86), OASIS[6], PCDOS, and UNIX[7]. Inquire for specific details and prices.

Trademarks of:
1 Cybernetics, Inc 2 Ryan-McFarland Corp 3 Micro Business Software, Inc.
4 Mini-Computer Business Applications, Inc 5 Digital Research Inc 6 Phase One Systems Inc 7 Bell Laboratories

© Copyright 1982 by Cybernetics Inc. All right reserved.
Prices and specifications subject to change without notice

CYBERNETICS IN C

8041 NEWMAN AVE., SUITE 208
HUNTINGTON BEACH, CA 92647
714/848-1922

THIS? or THIS!



The Graphics Generator

Business and Technical Graphics for the IBM Personal Computer

Now you can have the power, the control, the visual clarity you need for fast and efficient data analysis! Presenting **The Graphics Generator**—the *only* software currently available that gives you complete access to the PC's vast color graphics capacity. You'll create BAR GRAPHS • PIE CHARTS • LINE GRAPHS • *even* FUNCTION GRAPHS faster and more easily than you've ever imagined! What's more, it features a unique presentation mode, hard copy option, easy edit and repair, retain and recall capability, and more. *Imagine—it even generates regression lines for trend forecasting!*

IBM Personal Computer, IBM PC are registered trademarks of International Business Machines, Inc.

The Graphics Generator can take data *directly* from the VisiCalc® worksheet! You'll be able to quickly and easily transform columns and columns of figures into clear, easy-to-read graphs!

System Requirements

- DOS System—at least one disk drive
- Advanced BASIC language
- 64k memory
- Color/Graphics interface board
- Color/Monochrome monitor that plugs into the color/graphics board
- (Optional): IBM® cps dot matrix printer with Epson Graftrax-80® or Epson MX-80® matrix printer with Graphtrax-80®
- List Price: $195.00

So what are you waiting for? S your PC dealer for a demonstratio Or **Call Toll-Free 800-638-022** (in MD, 301-262-6300) for *free* i formation!



The Graphics Generator includ two diskettes and 160 page doc mentation manual. (1982/ISB 0-89303-266-2/D2662-7)

Brady

Robert J. Brady Co. • Bowie, Maryland 20715 • (301) 262-630
A PRENTICE-HALL PUBLISHING AND COMMUNICATIONS COMPAN

IS WORDSTAR® AS GOOD AS POWERTEXT®?

QUESTIONS TO ASK YOUR SOFTWARE SUPPLIER BEFORE HE SELLS YOU A WORD PROCESSING SYSTEM FOR YOUR IBM PC.

Ask a computer products dealer for word processing software, and chances are he'll try to sell you Wordstar.

It's a pretty good system. Lots of people use it. And besides, he's got it in his inventory, and you can take it home with you right now.

But before you settle for Wordstar, remember that—whatever system you choose—you'll be using it for a long time. So your decision should be based on *system performance*—not what the dealer happens to have on hand.

That's why you should look into PowerText.

Quite simply, PowerText will do far more for you than Wordstar.

We realize that's a very tough claim. But the Wordstar users who've switched to PowerText will tell you it's true. And if you'll read on, we'll give you some key questions to ask your dealer:

Ask if Wordstar automatically styles your copy for any kind of document you write. Can you tell Wordstar, "This is a letter," and then get a perfect letter, with the date, name and address, salutation, and closing exactly where you want them to be—automatically?

Does Wordstar produce memos, reports, presentations, and scripts in precisely the formats you want without your ever having to worry about where the words go on the paper?

Well, Wordstar *doesn't* do those things for you. But PowerText *does*.

That means with PowerText you can concentrate on what you're writing, not on printed style. You always get a beautiful, perfectly formatted document—automatically.

Just think of how much time and effort these remarkable capabilities will save you. It's almost like dictating to your computer.

PowerText gives you automatic margins. Indents. Spacing. Title page. Envelope or label.

Automatic justification. Centering. Variable pitch. Pagination. Table of contents.

And truly *intelligent* page breaks. (You'll never end up with "Yours truly," all by itself on the last page of your letter.)

And automatic indentation and numbering (Roman, Arabic, or alphanumeric, as required!) for numbered paragraphs. A valuable time-saver when you're writing outlines, questionnaires, and reports.

Plus columnar capabilities so sophisticated and flexible they can handle just about any problem you can think up.

Ask if Wordstar gives you all these features. (It doesn't.)

Of course, both PowerText and Wordstar give you complete editing capabilities. All good word processing systems do.

But PowerText gives you *built-in* form letter capability. With Wordstar, you'll need to buy the Mailmerge® system to produce form letters.

And PowerText gives you automatic headers and footers. *And* boxed copy. *And* print macros. *And* automatic footnote numbers.

And boilerplate inclusion. *And* vertical and horizontal border lines. *And* 132-character lines. *And* superscripts and subscripts.

With PowerText there's no limit to document length. And PowerText accommodates a full 25 percent more data per disk than Wordstar (or standard IBM software).

PowerText is a straightforward, easy-to-learn, easy-to-use system. You'll master it quickly with our superb new 10-lesson tutorial. You get a complete reference manual, too.

PowerText is a run-time, bootable system. It requires at least 64K of memory, two disk drives, and a printer. It supports both serial and parallel printer interfaces, extended memory, and RAM disk.

And, oh yes, be sure to ask your dealer about Wordstar's warranty. (It doesn't have one.)

PowerText does, and it's very simple: The system is warranted for a full five years. Should it ever fail to perform as specified, Beaman Porter, Inc. will fix it at no charge.

If you decide PowerText is the right system for you, you may find your dealer doesn't have it in stock. But he can get it for you, and quickly. Just have him call us at (914) 967-3504.

Or if you wish, you can order directly from Beaman Porter right now, using the coupon below.

If you have any questions about PowerText, by all means call us. We're always available to give you expert help and advice. With Beaman Porter, service and support are always as near as your phone.

PowerText®

COMPLETE POWERTEXT SYSTEM FOR IBM PC: $399.
TUTORIAL/MANUAL ALONE: $25.

BEAMAN PORTER, INC.
High Performance Computer Products

Pleasant Ridge Road Harrison NY 10528 (914) 967-3504

BEAMAN PORTER, INC.
Pleasant Ridge Road, Harrison, NY 10528

Send _____ complete PowerText system(s) for IBM PC @ $399 (prepaid)

☐ Send _____ PowerText tutorial/manual(s) only, @ $25 (prepaid)

(NY residents add appropriate sales tax.)

My check or money order for $_____ enclosed
Or bill $_____ to my

☐ Mastercard ☐ Visa

(Mastercard: list 4 digits above your name _____)

Card No _____ Exp. Date _____

Signature _____ Date _____

Name _____

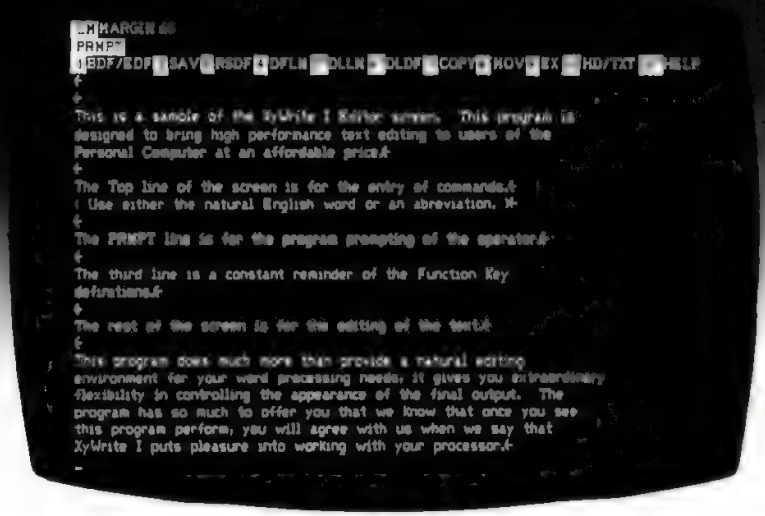
Street _____

City _____

State _____ Zip _____

WORDSTAR and MAILMERGE are trademarks of MicroPro International Corp

XyWrite is text editing and now text editing is only $50.



XyWrite I is more than just another Text Editor, even though it is only $50.

XyWrite I is a natural, easy, interactive editing tool that doesn't get in the way of what you want to say. XyWrite I is written in Macro to provide the kind of performance that you expect from larger systems.

Find out what XyWrite can do for the PC and what the PC can do for your word processing requirements.

Compare the features:

Fully implemented interactive word-wrap
Instantaneous on screen Margin Control
Powerful Define, Save, Merge, Search, and Change commands
Left/Right Margin Control, Centering, Indenting, Justification, Limited Hyphenation
Print while you edit, Directory Recall, On Line Prompting, DOS File Compatibility
Handles 40 or 80 column display
Extensive, well written Documentation and more

Compare the price.

There is no better buy. Even if you already own another word proce ing tool that cost you many times more, we think you should see what you are missing.

XyWrite I provides the features you need at a price you can afford.

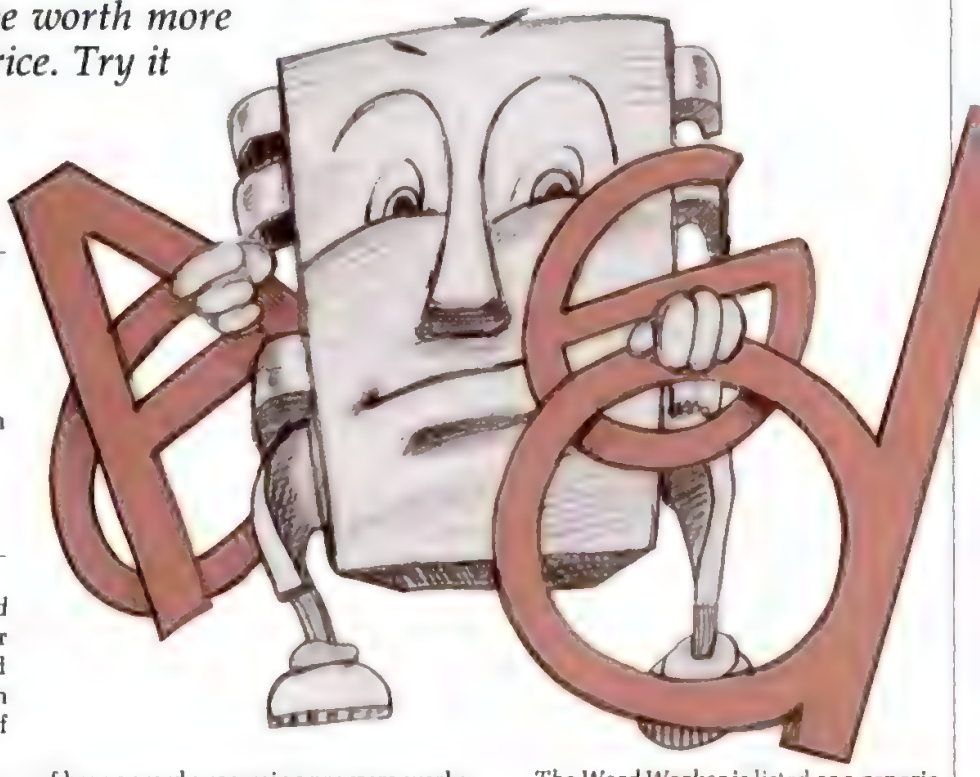
Order your XyWrite I today. Write to XyQuest, Inc., P.O. Box 3 Bedford, Massachusetts 01730. Or c (617) 275-4439.

XYQUEST

Prices subject to change. MasterCard/Visa ac cepted (include card number and expiration d Quantity discounts available. Dealer inquiries vited. Include $3 handling/shipping. Mass. re dents add 5% tax.

The Word Worker

The Word Worker may be worth more than its $29.95 sticker price. Try it and see what you think.



The Word Worker
List Price: $29.95
Write, Edit & Print
List Price: Paperback $24.95, hardback $34.95
Program and book by Donald H. McCunn
Design Enterprises of San Francisco
P.O. Box 14695
San Francisco, CA 94114
(415)282-8813

What is the difference between *The Word Worker* word processing software for $29.95 and the "Stars," "Selects" and "Easy" brands for $499.95? In cold cash about $470, but in editing and use, a lot of inconvenience.

The Word Worker is, quite frankly, a bit of a pain to use for any lengthy job, but it works. This review was composed, edited, and printed on an IBM PC operating under *The Word Worker* program. I can't say I fell in love with it, but I'd give it a 10 for value and good intentions.

Perhaps the most unusual aspect of the software is that it is written in BASIC. It is not encrypted or copy protected, and it can be listed and modified by the user.

About the $29.95 price: That is the cost for a single disk containing the programs, a sample copy, and a skimpy instruction booklet. It would take dedication and experimentation to learn to use the software with the package alone. But for $24.95 you can buy *Write, Edit & Print: Word Processing with Personal Computers*, a book by Donald H. McCunn, author of *The Word Worker* software. Not only does this hefty 528-page book take you step-by-step through the operation of the program, it also provides a complete program listing. Along the way, it gives one of the clearest and most intelligible explanations of a complex BASIC program I've seen. The book is worth its price just to get some idea of how a word processing program works.

I recommend that you buy the book before the program. If you've got the time and want to enter the program onto a disk yourself, you'll be all set. McCunn breaks the program down into small modules for entry, allowing you to run individual segments and proofread as you go.

I RECOMMEND that you buy the book before the program.

The book also contains an evaluation and comparison of various personal computers and printers, including the IBM PC. McCunn rated the PC number one in terms of disk storage and retrieval speed, edging out the PET/CBM, and easily outdistancing TRS-80 and Apple II products.

The book offers a good overview of BASIC and a comparison of the language as implemented on several computers.

The Word Worker is listed as a generic program, so the book gives the necessary conversions to install it on the IBM PC, the Apple II, the TRS-80, and PET machines, as well as a BASIC-80 version.

Program Requirements

The Word Worker for the IBM PC requires 48K of RAM, but 64K is recommended. PC-DOS and BASIC also are necessary, as well as four DOS disk utilities: CHKDSK, Format, Diskcopy, and Command.

The Word Worker may be the only word processing software for the IBM PC that can use a cassette recorder for loading the program and storing copy. However, the program is not available yet on cassette, so the user has to type it in.

In the disk version, the software will operate on a single drive without complaint. However, the size of the program, the associated BASIC, and the DOS utilities total more than 106,000 bytes, so users with single-sided drives will quickly run out of space. One solution is to load BASIC and the utilities from the separate DOS disk as needed.

The Word Worker is divided into four modules. One is a basic word processing segment called *BASICWP*, which is designed for letters and short documents, and includes some simple editing and printing commands. Another is an extended writing program called *Write*, which is intended for longer and more complex jobs, and permits chaining of files for editing and printing functions. The third is an extended editing module called *Edit*, for inserting new lines, deleting, reformatting blocks of copy, simple searching and replacing, and other tasks. The fourth module is an extended printing program called *Print*, for the output of drafts and final copies.

Best Use of the Program

The Word Worker performs as a capable, if awkward, electronic typewriter, reminiscent of the original IBM magnetic card typewriter that preceded the word processor and is still found in many offices. It relegates the PC to a line-oriented input and editing typewriter with a huge memory and the ability to make some fancy pages.

If the user is working from a rough draft or retyping from written copy onto the screen, *The Word Worker* should do the job. Composing on the screen is somewhat difficult, however, because of the program's limited editing functions.

I missed the ability to skip around using a cursor or a special control character, but I discovered that the PC version on disk allows the user to make quick spelling corrections and word changes to lines on the screen by hitting the Ins key and specifying a line number. However, to add, delete, or find and replace lines, the user has to leave Write, call up the Edit mode, make the changes, and then return to Write.

In Write mode, one can't skip back and forth in the text that is already in the system, searching for the right place to put an overlooked bon mot. This is the distinction between correcting and editing.

The Word Worker will perform reasonably well when you want it to correct a misspelling or insert a set of lines or delete a block of copy. The user can do a global search to change one word or a short phrase throughout a document. He or she can make only one fix on a line at a time, however, and can't delete a character in one word and add a character in another without retyping the line or making two

A Marketing Revolution

Author Donald McCunn speaks out: Brainstorming The Word Worker.

The Word Worker is a word processing program that has a specific marketing philosophy. The idea, according to author Donald McCunn, was to come up with a program that is inexpensive, is not written by and for technically oriented people, and is user adaptable for specific tasks. "*The Word Worker* is designed," said McCunn, "so that a writer can make it work exactly as he or she wants it to, or so a secretary can have a program that will automatically perform a specified, ordered series of tasks on a particular type of document."

McCunn said that distribution efforts will center on bookstore sales; outlets will be encouraged to handle both the disks and the *Write, Edit & Print* book. He said that copies will be available through some B. Dalton bookstores, smaller chains, and his own company.

"We feel that future software will easily be under $100," McCunn said. "The manufacturing cost of a disk is minimal. What the manufacturers are charging for is development and support. Our support is the book.

"Development costs for *The Word Worker* were kept to a minimum," McCunn said, "because the program is written in generic Microsoft BASIC. Only about 1 percent of the program is machine-specific."

Two more books and two more sets of programming modules are planned for the WEP series: *Automated Processing of Contracts, Forms, and Mailing Lists*, and *The Word Processing-Typesetting Interface* are the two books. McCunn is also the author of *Computer Programming for the Complete Idiot*, which claims to explain BASIC for microcomputers. —C.S

$1,000,000 IBM* PC?

YESTERDAY: A 500 nanosecs $1,000,000 IBM system 360/50 handled 50 users.
TODAY: A 200 nanosecs IBM PC handles only 1 user.
TOMORROW: A 200 nanosecs IBM PC can expand to 10 users!

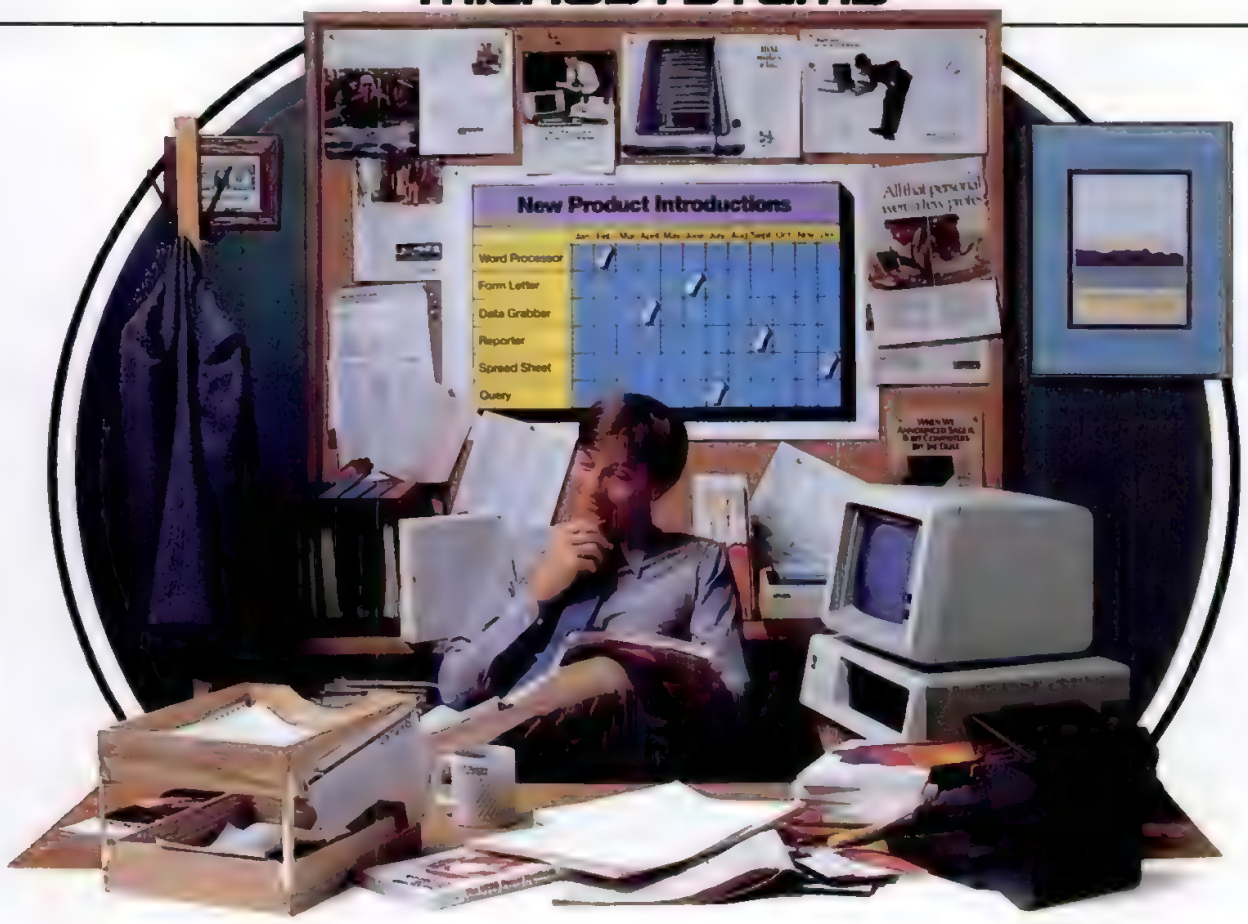
For less than $1000,
the ALL CARD™ starts tapping this RAW PC POWER.

WATCH FOR THE NEXT ISSUE!

or contact:
ALL COMPUTERS™
a NET COMPUTERS INCORPORATED COMPANY
110 Bloor Street West, Ste. 501, Toronto, Canada M5S 2W7 (416) 960-0111

*IBM is a registered trademark of International Business Machines Corp.

SOFTECH
MICROSYSTEMS



The Universal Operating System.* Finally, you don't have to repeat yourself.

There was a time when, if you wanted to develop applications for more than one micro, you had to sink significant time and money into reprogramming. Time after time.

With the UCSD p-System* from SofTech Microsystems, the industry's only Universal Operating System, those days are over. Whether it's an IBM PC or Displaywriter, an Apple, a DEC, an HP, an Osborne, a Philips, a Sage, a Tandy, or a TI, the p-System is portable across virtually any micro made anywhere today.

At last, increase your productivity.

Because the programming you do is portable and reusable. Every time. For every micro. So you can broaden your customer base quickly. Because the p-System runs the same object code programs on virtually all 8 and 16-bit micros.

We know how much work you put into programming, so the p-System allows you to reuse program components. At last, you can *use* programs and utilities over and over again—instead of writing them over and over again. In fact, as much as 50% of the code used in one application can be reused on others.

Designed to be timeless.

With the p-System, you'll never have to worry about locking yourself into an OS that will some day lock you out of the market. Because the p-System's efficient, advanced design will let you grow with tomorrow's hardware, and let you continue to expand your product line.

You can develop higher quality applications faster, less expensively, more dependably and more efficiently. For the entire market.

All at the same time. All on one micro.

Finally, once really *is* enough.

Finally, Once is Enough.

For product information or information on how to get a copy of the p-System Application Catalog, call or write to us at SofTech Microsystems.

The p-System for the IBM PC can be purchased from IBM product centers or through your nearest retail outlet.

SofTech Microsystems · 16885 West Bernardo Drive · San Diego, Calif. 92127 · (714) 451-1230

*Universal Operating System is a trademark of SofTech Microsystems Inc., UCSD p-System is a trademark of the Regents of the University of California

GALAXY VOYAGER™

Destroy or be destroyed!



DISTRIBUTED BY PC SOFTWARE INC 22 FRONT STREET/WORCESTER, MA 01608

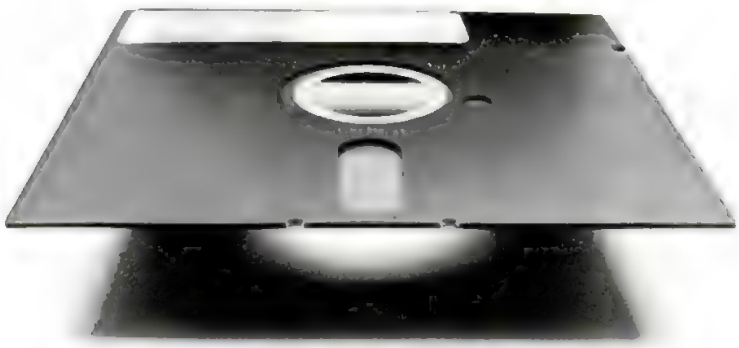
CALL TOLL FREE 1-800-343-5788 (IN MASSACHUSETTS 1-617-791-2227) • MASTERCARD AND VISA ACCEPTED
PRICE: $29.95. ADD $2.50 FOR SHIPPING & HANDLING • AVAILABLE IN FLOPPY DISK FOR IBM* PC COMPUTERS

WATCH FOR OUR LIBRARY OF IBM* PC SOFTWARE

*IBM is a trademark of International Business Machines

You can't beat OMNI™ quality... even at a higher price!

Each OMNI flexible disk is critically certified error-free above the threshold of your system. Every disk is rated for 12 million passes without disk-related error or significant wear. (Precision fabricated to all ANSI specifications.)



OMNI 5¼" FLEXIBLE DISKS DISTRIBUTED BY PC SOFTWARE INC 22 FRONT STREET/WORCESTER, MA 0160

PRICES PER 10-PAK • **CALL TOLL FREE 1-800-343-5788 (IN MASSACHUSETTS 1-617-791-2227)** • MASTERCARD AND VISA ACCEPTE
SINGLE SIDE/SINGLE DENSITY $19.95 • SINGLE SIDE/DOUBLE DENSITY $23.95 • DOUBLE SIDE/DOUBLE DENSITY $39.95 • FLIP FLOPPY $39.
LIBRARY CASE $2.95 • ADD $2.50 FOR SHIPPING & HANDLING • MONEY BACK GUARANTEE IF NOT COMPLETELY SATISFIED

ASK ABOUT OUR FULL LINE OF OMNI 8" FLEXIBLE DISKS AND DISK DUPLICATING/FORMATTING & PRIVATE LABELING SERVICES

passes at it. Text editing is difficult when one has to move back and forth between Write and Edit modes. Mistakes may occur because of sheer weariness.

Essential Features

The Word Worker can perform most word processing tasks. Text can be entered; the sentences have automatic word wrapping; margins can be set left and right and changed as needed; and text can be underlined.

By using a "fill" command, one can generate a string of dots (called "leaders" in typesetting), which is used especially for tables of contents. The "fill" command, combined with *The Word Worker*'s ability to center words or phrases automatically, print them flush left, flush right, or a combination of all three on one line (something that some of the full-featured programs cannot offer), are among the program's strong ponts.

The program's means of centering text or moving it between margins is the simplest I've seen. To move text flush right, one presses R and the Tab key (C and Tab will center copy). If the user types a number followed immediately by the Tab key, the cursor jumps that many spaces.

So what is missing from *The Word Worker*? Text cannot be right-justified; the program does not, as delivered, support any of the PC's ten function keys; and the user cannot move through text with quick strokes of the cursor keys.

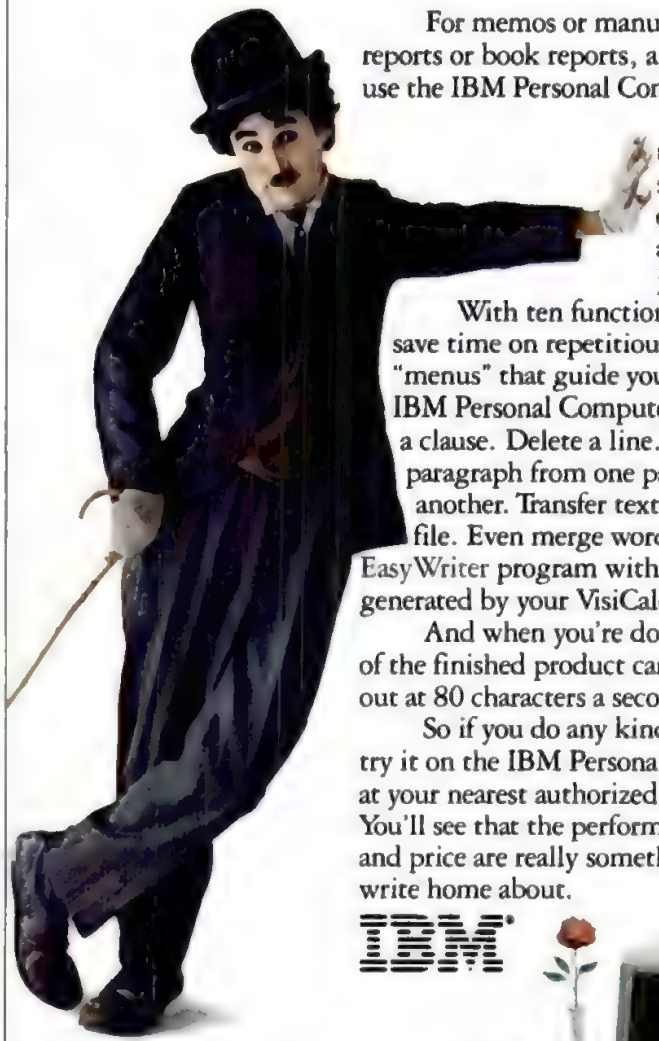
Editing

Ah, here's the rub. Follow me through a simple editing change. I have finished writing this review, stored my copy, and decided that the first sentence of this paragraph should be phrased more like the original; it should say, "Ah, there's the rub."

I type RUN"EDIT to load and start the editing module. The program asks whether I want to store files on Disk A or B; from which disk I want to retrieve files; and whether I would like to chain several functions together (such as retrieve, display, edit, and store).

Now I'm ready to read the program's directory of files, where I face a number of housekeeping questions. When I finally get to the editing menu I type #2, "Correct Line." The copy appears on the screen in blocks of 20 lines at a time. If I know the

How to move a paragraph.



For memos or manuscripts, sales reports or book reports, a person could use the IBM Personal Computer.

Because, with the EasyWriter* software program, creating, revising and storing text is just that. Easy.

With ten function keys that help save time on repetitious tasks and "menus" that guide you along, the IBM Personal Computer can insert a clause. Delete a line. Move a paragraph from one page to another. Transfer text from file to file. Even merge words from your EasyWriter program with numbers generated by your VisiCalc† program.

And when you're done, a copy of the finished product can be printed out at 80 characters a second.

So if you do any kind of writing, try it on the IBM Personal Computer at your nearest authorized dealer. You'll see that the performance, quality and price are really something to write home about.

IBM



The IBM Personal Computer
A tool for modern times

For a store near you (or for information from IBM about quantity purchases) call 800-447-4700. In Illinois, 800-322-4400. In Alaska or Hawaii, 800-447-0890

*EasyWriter is a trademark of Information Unlimited Software, Inc.
†VisiCalc is a trademark of VisiCorp.

NOW, A PC GAME AS SOPHISTICATED AS YOU ARE.

When we developed the MICROCOSM simulation and game for the IBM-PC, we also designed it for the PC user . . . someone who has more fun at the computer testing ideas than testing reflexes.

MICROCOSM is a sophisticated PC pastime that combines high visual interest with a level of involvement usually found only in elaborate text games.

The foundation of MICROCOSM is an intriguing simulation of the birth, life and death process among populations of micro-organisms. From there, it can be as challenging as you want it to be.

You might begin by experimenting with the fascinating patterns your colonies of "microbes" generate as they evolve. Fifty population patterns are built-in, and you can store and recall 30 more of your own creation (in variable colors, if you have the Color/Graphics Adapter).

Then, go deeper by playing one of several competition options and degrees of difficulty. Use your knowledge of the patterns and some deft strategy (planting a "virus," for example) to sabotage your opponent's colony while yours flourishes.

Get even more creative by altering the genetic laws that govern your microbe populations — a whole new game plan. MICROCOSM will stretch you as far as you stretch it. (With sound-effect shutoff and quick exit to DOS, you can enjoy MICROCOSM at the office, too.)

Written in machine language and BASICA, MICROCOSM requires PC-DOS, 64K and one disk drive; no other accessories are needed. The game can be played on 40 or 80 character, monochrome or color, with countless special display options.

A comprehensive manual provides background on the simulation's theory and ensures fast, easy start-up. MICROCOSM is guaranteed high quality. Even the attractive vinyl binder will last a long time, just like your interest in the game.

Order your MICROCOSM today. It's in stock now at only $39.95.



VISA MasterCard

TOLL-FREE RUSH ORDER NUMBER 1-800-547-5995
Call anytime (orders only—please write for technical info)

Enclosed is check or money order for $39.95 + $2.00 postage/handling.
Send MICROCOSM to:

Name _____

Address _____

City _____ State _____ Zip _____

(PA orders add 6% sales tax. Outside continental U.S. add $5.00.) C10

Dealer inquiries welcome

IBM is a trademark of IBM Corp.

AEON CONCEPTS™
Computer Products Division
1657 Red Mill
Pittsburgh, PA 15241

line number at which I want to make a correction, I can type the number in at the bottom in response to a prompt. If not, pressing return will take me through the file one page at a time.

Now that I have found the error and told the program the line to be corrected,

THE USER cannot move through text with quick strokes of the cursor keys.

the following appears on the screen:

```
!* Ah. here's the rub. Let's !
TYPE IN PHRASE JUST BEFORE CHANGE.
```

I type in ah. The program says:

```
TYPE IN ANY ADDITIONS AND (ENTER).
```

I type in t. The program says:

```
ENTER<TO DELETE FIRST OF LINE:
!* Ah.!
ENTER>TO DELETE LAST OF LINE:
! here's the rub. Let's !
TYPE IN ANY DELETIONS
!
```

I have nothing to delete, so I press [Return].

After a few grinds of the disk drive head, the following appears:

```
LINE #40
THE CHANGED LINE WILL READ:
(!-INDICATES CHANGES)
Ah. !t!here's the rub. Let's
COMPLETE THESE CHANGES (Y OR N)?
```

I type in Y and the program inserts a "t."

The other editing commands, including line or block insertions, work in a similar fashion. The Correct Line function is ten to 30 steps more complicated than other programs, which require moving the cursor up a few lines, pressing the Ins key, and typing in the corrections.

Printing

The Word Worker holds its own and scores a few points on some of the opposition with its Print mode. The program allows users to select ten printing format parameters, including selecting the number of spaces between lines, the number of

SMORGASBORD SOFTWARE



for your IBM-PC

PRESENTS

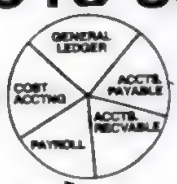
A LOW-COST, POWERFUL, MENU-DRIVEN PACKAGE. THIS ACCOUNTING PACKAGE CAN BE RUN ON A MODULAR OR INTEGRATED BASIS. ONLY $99.00 PER MODULE, INCLUDING MANUALS AND TRAINING GUIDES COMPILED BY EXPERTS IN THE ACCOUNTING AND EDUCATIONAL FIELDS.

THE CUSTOMIZING POTENTIAL OF THIS SYSTEM WILL DELIGHT BOTH THE PROFESSIONAL USER AND THE HOME USER. MANY EXCEPTIONAL FEATURES INCLUDE

- Instant Response and Immediate Usefulness
- Budgets
- Business Management
- Check Printing
- Customization
- Direct Postings
- Easy Entry
- Expenses
- File Maintenance
- Financial Management
- Formatting
- Fully Supportable
- Home Management
- Integrated
- Investments
- Menu-Driven
- Modular
- Monthly, Quarterly or Yearly Reporting
- Multi-Level Reporting
- Net Worth
- Password Control
- Personal Financial Statement
- Reconciliations
- Record Management
- Reporting
- Task Selection
- Training Manuals
- Updating
- User-Friendly
- and MUCH MUCH MORE

SM RGASBORD SOFTWARE
(408) 980-7147
3211 Golf Drive, San Jose, CA 95127

We're selling the whole pie . . . for only $295.



I'd like to know more. Send _____ information on other available adaptations.

Enclosed is my check for $ _____.

Please rush me _____ copies of Smorgasbord Accounting Software.
(Calif. add appropriate sales tax)

NAME _____ TITLE _____

COMPANY _____

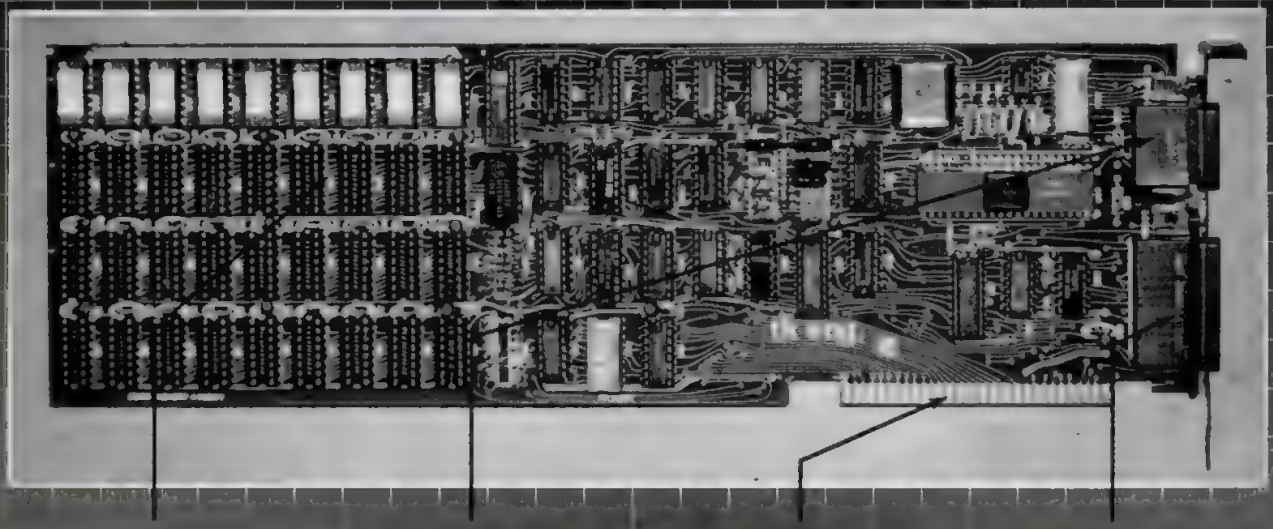
ADDRESS _____

CITY _____ ST _____ ZIP _____

SM RGASBORD SOFTWARE
3211 Golf Drive, San Jose, CA 95127
(408) 980-7147

WHY SPEND MORE

TK ENG. introduces a quality IBM* compatible RAM + SERIAL I/O + GAME I/O board, at t aggressive price of $325.00 with 64K RAM. Expansion capabilities to 256K RAM can be installe $80.00 per additional 64K RAM.



256K RAM
A 64K to 256K parity checking RAM is fully socketed for easy memory expansion. The memory address is switch selectible, using up only the required memory space.

GAME I/O
Interface consisting of two joy-sticks and four switch inputs are IBM BASIC compatible. A standard GAME I/O DB15 connector provides connection to the rear plate of the IBM computer.

GOLD IBM INTERFACE
Gold connectors as well as glass epoxy PCB will provide years of reliable service, with all hardware interface meeting the IBM specification.

ASYNCHRONOUS COMMUNICATION
A RS232 and 20Ma (TTY) interface supports software programable baud rates, parity, stop bits, and character. Modem and serial printer are fully supported by the IBM communication software. A standard DB25 connector allows for the easy connection to serial devices.

KIT BUILDERS — You can save even more with the bare PCB at only $79.95.

COMPARE QUALITY, FEATURES AND PRICE — THEN CALL TK ENG.

tk eng.

P.O. Box 1936
Corona, CA 91720
(714) 552-8946

Dealer Programs Available.
Please include $4.00 for shipping & handling. California residents must include 6% sales tax.
Visa and Mastercharge accepted.

ines per page, the size of the top margin, he number of spaces to indent from the eft margin, the number of lines to skip oetween the end of a chapter and a new chapter heading, and pagination controls.

The program can print a main title on page 1 and include that title in a running header or footer on each subsequent page. It can also extract new chapter titles from nonprinting remark lines and print them where specified. A special control asks the program to print the main title on even-numbered pages and the chapter title on odd-numbered pages.

Ten choices are offered for positioning the page title and/or page number: top or bottom left, center, right, inside or outside. Page numbers can be suppressed or printed in one of three formats.

The printing mode also calls up and inserts footnotes, which are stored as separate files by *The Word Worker*.

Finally, the BASICWP program also has a handy subroutine that takes the inside address from a business letter and prints it on an envelope at your command.

The printing routine operates under the BASIC Lprint command, and should drive any printer that will accept the IBM's output codes. (This article was produced on a Smith-Corona TP-1 with a parallel interface.)

As delivered, the program allows the user to underline text on the printer. The book offers instructions on how to add enhancements such as boldface, subscripts, and superscripts.

File Management

The program permits little margin for user error. It is possible to lose text, to delete lines inadvertently, and to designate any number of files by the same name.

The program's directory, separate from the one produced by a Files command under BASIC or a Dir command under DOS, provides scant information. There is no way for the user to determine file size, date of entry, or version number unless he or she codes them into the file name, which is restricted to eight letters.

Also, if the user deletes a file from BASIC with a kill command, it remains in *The Word Worker*'s disk directory. My commands to delete it kept bringing me an error message from BASIC.

Efficiency and Learning

This set of programs is like an elephant in a ballet troupe: It is neither elegant nor subtle. But despite the fact that relatively simple tasks require numerous steps, the program is not difficult to learn if one has the book as a guide.

Outstanding Features

If there's something the *The Word Worker* user wants to change, or if he or she would like to customize the messages on the screen, a little tinkering under the hood is all that is necessary. That is easier for some people than for others, but one doesn't have to be a programming genius. McCunn's book furnishes a number of suggested modifications. One of the first I'd recommend to IBM PC users would be the assignment of editing and printing tasks to the ten function keys.

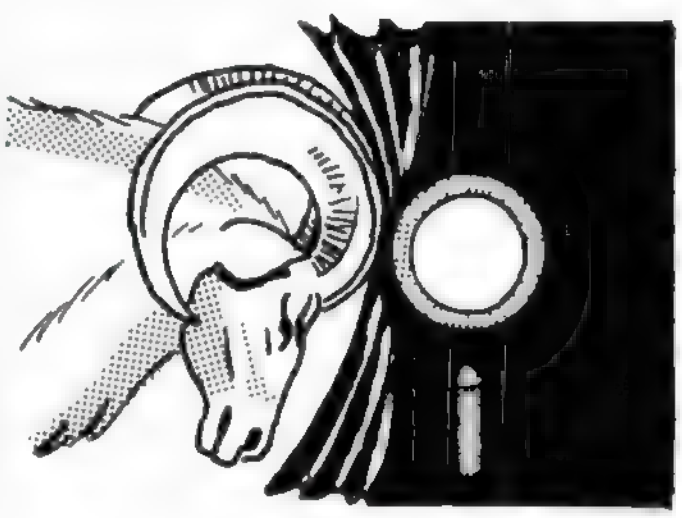
Aesthetics

The Word Worker does not display a nice, neat menu of choices or offer a margin indicator on the screen. As befits its bargain-basement price, what one sees on the screen is bare bones.

At the top of the screen is a reminder that the PC's special control character is Ctrl-Q. Line numbers are displayed down the left side of the page, which is essential for later editing. Paragraph indents are visible with leading spaces and the use of a special character in column one. No indication is provided on the screen for the column number in which the cursor is waiting. There is no end-of-page indicator either. All in all, what appears on the screen is what gets printed.

If you're looking for perfect or easy writing or a program that will elevate you to a select group of word processing stars, you probably will not be very happy with *The Word Worker*. But if you're looking for an inexpensive word processor and don't mind putting up with extra keystrokes and the limitations of line editing, this program will suit you fine. *The Word Worker* will do most word processing tasks and do them well. ***/PC***

SPEED UP YOUR SYSTEM with the *Versa*-Ware® RAM Disk/Spooler package!



Save access time. RAM Disk allows emulation of one or two 160k floppy drives or one 320k floppy drive in RAM.

RAM Spooler permits use of RAM as a printer buffer. Computer operates at full speed while the printer continues to print!

This *Versa*-Ware package (suggested retail price $49.95) and other MTI products are available at participating ComputerLand and other IBM PC dealers. For more information and name of nearest dealer, call us toll free 1-800-348-3377 (Indiana 219-664-5741).

MTI *Memory Technologies, Inc.*
25 Main Street · Box 6A, Twelve Mile, IN 46988
Toll free 1-800-348-3377 (Indiana 219-664-5741)

A PowerText Performance

The program does the job, but the ax needs sharpening before it can become powerful.



PowerText
Beaman Porter, Inc.
Pleasant Ridge Rd.
Harrison, NY 10528
List Price: $399

While reviewing *PowerText*, I was reminded of my grandfather, who liked to call himself an "Ax" carpenter. If he sawed off a board and it didn't quite fit his purpose, he'd get out the ax and beat on it until it did. Ax carpentry isn't much for ornamentation, but it gets the job done.

Selecting a word processing program is similar: Choosing the tool that gets the job done is very important. *PowerText* is what I'd term an ax word processor; it doesn't provide ornamentation, but it's an adequate tool. The buyer, however, should check carefully that this tool will, as my grandfather used to say, "do the deed."

Requirements

PowerText uses the UCSD p-System, supplied on the system disk. The program accommodates both single- and double-sided drives; however, a minimum of two single-sided drives or one double-sided drive is required because the program fills one side. A single-sided drive stores up to 200K, and double-sided drives can be formatted to record 400K of text. Disks must be specially formatted using the *PowerText* program with the option of having disks hold eight or ten sectors of information per track. Selecting ten sectors per track is more practical because 25 percent more storage space becomes available.

The system disk, which contains the program code, is supplied on a single-sided disk. If you have double-sided drives, you'll want to copy the program onto a double-sided disk, which allows you to store documents on the system disk.

PowerText will run on a 64K system, leaving enough memory for short documents only. With 64K, the actual number of bytes available for documents is 13,308—roughly three pages of text having 50 lines of 80 characters each. The use of *PowerText* for longer documents will be limited unless you break up text into a number of small files. *PowerText* is best suited to systems with more than 64K of memory.

Although set to run an Epson printer, *PowerText* supplies print routines that make the PC compatible with Qume, Diablo, NEC 3550 and 3530, C. Itoh 510, and Integrated Data Systems 460. It supplies one general routine for all other makes, and Beaman Porter, Inc. also customizes *PowerText* for any compatible printer.

Editing

Central to *PowerText*'s method of word processing is the use of stored formats for documents. Letters, for example, routinely include dates, salutations, addresses, and closings. How and where this information should appear in the printed document is recorded in a file on disk. More information is included in the format files: line spacing, paragraph indentation, margins, pitch, and the number of lines per page. Once created, the format file is used whenever you create a new document.

Although the idea of stored formats is not new, *PowerText* allows you to use them to perform text editing in a unique way. At the beginning of each new document, specify the format file to be used. Next, type the different elements of the document, prefacing each with a key word defined in the format file. For example, to enter the salutation of a letter, type the key words /sal and John. When you print the letter, the salutation will be printed out as "Dear John," correctly placed and punctuated at the top of the letter. You can type the date, address, and salutation in any order without considering line spacing, and the computer will sort it all out. The same goes for the body copy: Type /par at the beginning of each new paragraph without indenting, skipping lines between paragraphs, or using carriage returns, and the program will set up properly indented and aligned paragraphs in the order that you typed them.

As you may have guessed, *PowerText* is not a screen-oriented word processor. Letters have piles of information at the top of the screen followed by the body of the text strung out in lines of various lengths. As long as you correctly use the key words designated in the format files, the letter will print out correctly despite the apparent disorganization on the screen.

One consequence of this editing method is that you are not sure how the finished document will look. *PowerText* solves this problem by allowing you to display fully formatted text with an option of the print utility. (Note, however, that you cannot edit text at this point in the program.) If the sight of unformatted text is too bothersome, the command "Noedit" makes *PowerText* function as a screen-oriented word processor.

PowerText is a full-fledged editor with the normal options of inserting and deleting text, making global searches and replacements, copying and moving parts of a document, and paging or scrolling through text. You can also set the direction of operation to delete forward or backward through the document while you are editing. Because formatting is done from a format file, setting tabs or adjusting margins while editing is unnecessary, although margins can be changed by typing special commands. Most of the advantages of *PowerText* over other word processors come from these special commands.

In general, I was satisfied with *PowerText*'s editing capabilities, though a non-screen-oriented program required some adjustment. You can type a line right off the end of the screen and out of sight. This is more likely to happen when you first use *PowerText* because the word wrap feature must be turned on manually at the beginning of a document. The prompts on the screen are somewhat difficult to read, adding a certain awkwardness to the process of text editing. No help menus or messages are available, so the operator must rustle through the pages of the manual for answers to questions. I'd rate *PowerText*'s editing as average to good.

File Management

PowerText is fully equipped for file management. You can format two disks at a time, duplicate disks, copy files, rename disks or individual files, and check the disks for bad sectors. You can attempt to recover files in a damaged sector, but recovery is not always possible.

An option called "Krunch" rearranges files to save disk space. Parts of the disk can also be reserved for later use. Two levels of disk directories can be called up, depending on the amount of information desired.

PowerText's style program, which helps the user create format files, is an outstanding feature. Simple prompts appear on the screen, asking the user questions about how the document should appear. This program is very easy to use, and you can create a new file in just a few minutes. These files are the heart of *PowerText*'s method of editing, and I commend the designers for simplifying a procedure that could be difficult.

Printing

PowerText can be configured to use a number of different printers. The print utility offers the options of printing a document on a continuous form or individual sheets of paper. It can also display the document as it will appear on paper. Another option on the print menu saves the fully formatted document on disk for later reference or editing. Finally, the file may be sent to a different printer or a data communications channel.

PowerText has a special feature that enables hexadecimal code commands to pass directly from the document to the printer. For example, at a certain point in a document you can embed a hexadecimal command to make the printer underline or change pitch. With sufficient technical knowledge, you can make a printer do almost anything, but beginners will probably not take advantage of souping up a printer in this manner.

The only way to terminate printing is to reset the computer. This kind of procedure carries the hint of ax word processing.

A Variety of Features

PowerText has a variety of editing and printing features. It performs standard word processing functions, such as underlining, boldfacing, super- and subscript-



"Personal Data Base is exactly the kind of program my customers need for the IBM PC."

Michael Madison, Sales Manager of Computerland, Champaign, Illinois.



"Personal Data Base may well be the most useful program to come along for the Personal Computer."

Ed Coudal, software reviewer and writer.



...PERSONAL DATA BASE...

Both dealers and users alike are finding SuperSoft's Personal Data Base one of the most useful programming tools available for the IBM Personal Computer.

With Personal Data Base you can create

- Mailing lists
- Customer lists
- Investment portfolios
- Inventory records
- Tax records
- Wedding lists
- Personnel records
- Family histories
- Household expense lists
- Business expense lists
- Client accounts
- Job reports

In fact, Personal Data Base's ability to keep track of things is limited only by your imagination.

IBM PC is a trademark of International Business Machine Corp.

Personal Data base includes the following features:

- Creation of files and records
- Complete control over size and layout of all fields
- High/low or Low/high sorting on two different fields
- Searching on any field (up to three at a time)
- Creation of mailing labels
- Flexibility in the creation of both screen and printed reports
- Complete user's manual with numerous sample files
- Totalling or averaging of numeric columns on reports

Write or call for more information on Personal Data Base.

Available from fine dealers everywhere, or directly from SuperSoft.

Japanese Distribution: ASR Corporation International, 3-23-8, Nishi-Shimbashi, Minato-Ku, Tokyo 105, Japan, Tel. (03)-4375371. Telex. 0242-2723.

Personal Data Base:	$125.00
Manual Only:	$ 15.00

SuperSoft®

FIRST IN SOFTWARE TECHNOLOGY P.O.Box 1628 Champaign, IL 61820 (217) 359-2112 Telex 270365

Copyrighted material

ing, automatic page numbering, search and replace, and headers and footers. *PowerText* also has functions that number footnotes automatically, triple-strike letters for extra boldfacing, and one called "Title Paragraph," which centers subheads over text.

A command called "Contents" automatically generates a table of contents for documents and one called "Box" encloses specified text in a box. If you've ever tried to draw a box around text using other word processors, you'll appreciate the ease with which this function gets the job done.

POWERTEXT'S style program, which helps the user create format files, is an outstanding feature.

PowerText's column and outline commands are two features that especially impressed me. When typing columns, you normally type entries across the page horizontally. Such an effort usually requires a lot of tabbing and concentration. With *PowerText*, however, you can type an entire column at one time, then type the next column(s) in the same way, one after another, without any tabbing at all. If you've specified two columns (you can use up to 14), you type /1 and all the entries that go in the first column. Then you type /2 and the entries for the second column. Do the same using /3, /4, etc. for any succeeding columns, and *PowerText* will search through all the entries and line them up on paper. This procedure for typing columns is the simplest I've ever encountered.

Typing outlines is another task that *PowerText* simplifies. To type an outline one would normally organize major headings and subheadings in sequential order down the page, indenting and adding roman numerals or letters according to the levels of importance. With *PowerText*, after specifying the levels and numbering scheme of the outline, the outline function indents and labels each element. You type each element in the order it is to appear and specify its level of importance. You might type /1, /2, or /3 before each element of the outline to differentiate three levels, but you don't have to type any labels or numerals. The outline command increments each label automatically whether it is a roman numeral, digit, or letter. If you have to change the outline, the outline command automatically relabels each element. This feature is handy for anyone who creates formally prepared research papers and reports.

Other interesting features are page breaks, which automatically eliminate single lines, or widows, dangling on a page. These features qualify *PowerText* as a full-featured word processing program.

Efficiency

In terms of efficiency, *PowerText* has a few flaws. The amount of time required to switch between the utilities listed on the main menu is one weakness. Watch in hand, I timed 31 seconds to exit from the editor and load the print utility. Quitting the file utility and loading the editor can take 13 to 18 seconds, depending on file size. The only way to leave the style program that designs document formats is to reset the computer—a process that takes 40 seconds. These times represent considerable delays in operation.

A point that counterbalances the delays is the type-ahead capability of *PowerText*. After a while, most people know their word processing program well enough to make selections in a procedure without seeing a menu. After a short acquaintance with *PowerText*, I could type the selections necessary to exit the editor and go to the print utility all at once, and then sit back and let the computer run itself. I got a pleasant sense of working at my own speed rather than the computer's (which is slower in this case).

Once you get used to the fact that what you see (on the screen) isn't what you get (on paper), editing is fairly easy with *PowerText*. You are initially burdened with learning the syntax of the formatting commands for paragraph indention and



Inviting!

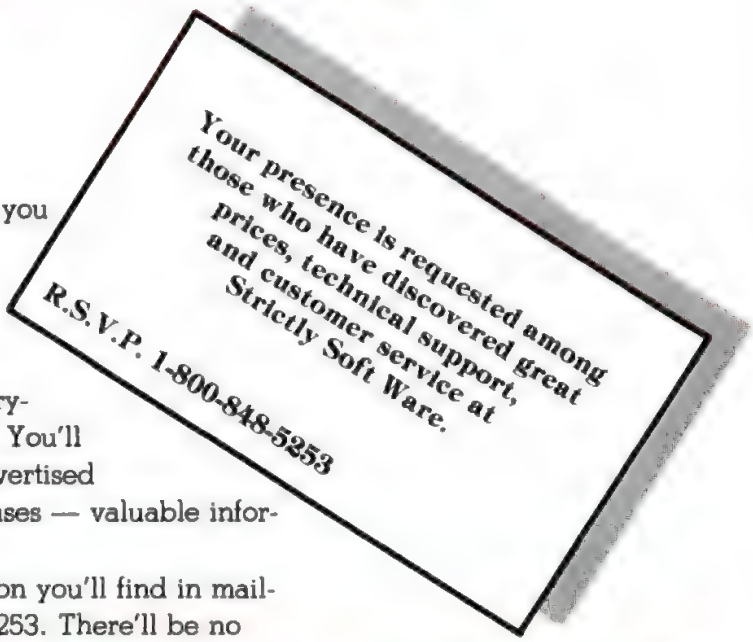
When the invitation arrives, you know immediately that things will be done in style.

That's the way people are thinking of **Strictly Soft Ware.**

We've issued an invitation for you to enjoy super prices, prompt delivery, and superior service.

When you're on the **Strictly Soft Ware** mailing list, you'll automatically receive our industry-leading catalog (Apple or IBM). You'll also receive news of sales, unadvertised specials, and new program releases — valuable information you can use.

So respond to the best invitation you'll find in mail-order software. Call 1-800-848-5253. There'll be no regrets.



IBM SPECIALS

Best Financial Program	**$74.99**	**Apple Panic**	**$26.99**
Data Capture	**$74.99**	**Conquest**	**$24.99**
Math Magic	**$79.99**	**Visicalc**	**$189.99**
Frogger	**$26.99**	**Temple of Apshai**	**$32.99**

Above Specials In Effect Until Dec. 1, 1982

Holiday Gift Idea #1

*The **Strictly Soft Ware** Subscription Plan. Prepayment allows the account to be drawn upon for whatever you want, whenever you want. When we send the package, we'll provide a balance statement as well. Here's a gift that can last all year long. Also ideal for large institutions.*

Holiday Gift Idea #2

*The **Strictly Soft Ware** Gift Certificate. Here's the perfect way to take the guesswork out of holiday giving. A gift certificate and the **Strictly Soft Ware** holiday catalog guarantee the perfect gift for everyone on your holiday list.*



We take Master Card or VISA (include card # and expiration date). Ohio residents add 5.5% tax. Include $2.50 for postage. 3% discount if check accompanies order.

Send for free catalog. Prices subject to change. Holiday Hours: 9-9:30 weekdays; 9-6 Sat.; 12-5 Sun.

Strictly Soft Ware
Post Office Box 338
Granville, Ohio 43023
order by phone **800-848-5253**
in Ohio **614-587-2938**

Apple is a registered trademark of Apple Computer, Inc.
IBM is a registered trademark of International Business Machines Corp.

typing columns, but once you master the commands, you can be sure the text will appear on paper as you want it. If you make an error, however, you'll most likely discover it when displaying text using the print utility. Remember, it is in the print utility only that you can see how the text will look on paper. Unfortunately, typos and command errors cannot be corrected at that time. You must cancel the utility and reenter the editor (a process I timed at 20 seconds). If you don't spot all your mistakes the first time, you may end up making a number of trips from the print utility to the editor.

BEGINNERS beware.

One major oversight is that the function keys are ignored; *PowerText* makes no use of them at all. Certainly many of the important key words and commands could be programmed to use these keys, saving the effort of typing them out, speeding up text processing, and decreasing the possibility of errors. Those ten function keys would go a long way toward making the editor easier to use.

A major advantage attributed to *PowerText* by its makers is that it frees the user from having to worry about how text will look on paper. *PowerText*'s documentation claims that once you've determined format files, you can word process as you would dictate a letter. I question, however, whether the formatting capability of *PowerText* really saves time. *PowerText* eliminates the need to decide where to place information on paper, but it diminishes this savings with the need to remember and type four to six character commands for each element of the document. For example, beginning a new paragraph with *PowerText* requires four keystrokes (typing /par). Other word processors may require three to five keystrokes, including extra line spaces and indentation. In this case, there is little, if any, reduction in the number of decisions or keystrokes.

Without question, its method of typing columns is an advantage over other programs, and *PowerText* imposes consistency in the appearance of what is typed. On the whole, I don't see *PowerText*'s formatting ability as an advantage over screen-oriented word processors.

Using and Learning

The *PowerText* people have done first-time users a favor by including a tutorial in the documentation. This tutorial introduces the important concepts and procedures of its method of text editing. The reader has a sound understanding of the program at the end of the ten lessons. The unsuspecting reader is told that "some errors are fatal" and "careful study of the reference material and experimentation will uncover a wide variety of features." For me experimentation uncovered a wide variety of ways to make errors. The documentation would benefit from some good editing, but the content of the lessons allowed me to use the program fairly quickly, something a first-time user would be eager to do.

In spite of the tutorial, *PowerText* is not really a program for beginners. Unless the user is firmly grounded in the basic concepts of text editing and file management, he or she could easily become confused. One of the first things one would need to know to edit a document with *PowerText* is to set parameters for the display of text on the screen. One of these parameters turns on the word-wrap feature, which is otherwise set to "off." Yet the key used to set the screen display appears nowhere on the editing menu; you must remember how and when to give the command. This kind of omission occurs more than once.

Beginners may also have trouble with the computer terminology used on screen and in the documentation. When bringing up the directory of a disk, the computer asks, "Dir listing of what vol?" That can be a perplexing question if you don't know that "vol" stands for "volume," which means "disk." The program is asking you to type the name of the disk, but the request is probably not apparent to the uneasy newcomer.

PowerText's method of moving text is



BetterBasic™ makes Basic easier

Easier to use and debug

That's because it gives you many new language features your BASIC just doesn't have.

- Program faster, easier
- Make fewer errors
- Program with labels (symbolic addresses) instead of line numbers
- Program in small functional modules instead of large, complex programs
- Combine many functional modules into one integrated program

And BetterBasic does all this using your own IBM PC BASIC . . . even if the programs and modules you want to combine use the ***same*** or ***overlapping*** line numbers!

SpeedBasic™ makes Basic faster

- Programs run up to 4 times faster
- Reduces run-module RAM/Disk requirements

INTRO OFFER: SAVE $20.00

Order BetterBasic* or SpeedBasic* now and save $20.00 off our regular list until 12/31/82.

See our other ad this issue for 256K expansion RAM offer.

Entelekon™

12118 Kimberly
Houston, TX 77024
713/468-4412

*Programs require IBM PC with 48K, one disk, & PC BASIC

NAME

ADDRESS

CITY STATE ZIP

☐ **BETTERBASIC™**: $39.95 (Reg. $59.95)

☐ **SPEEDBASIC™**: $39.95 (Reg. $59.95)

☐ BOTH FOR: $69.95 ($119.90 value!)

_____Mastercard _____Visa _____Exp. date

CARD NUMBER

SIGNATURE

quite scary. To move part of a letter, you must first delete it. If I were a beginner, I'd feel very uneasy about deleting text I wanted to keep. The deleted text disappears into a buffer (a kind of holding pen) where it can be recalled into the text using the copy function. This method of moving text works, but you may make an error or erase a buffer before you mean to.

Characteristics/Impediments

PowerText has some real plusses and minuses. On the plus side, it offers a wide variety of outstanding editing features. The program's abilities to generate outlines, create tables of contents, and produce columns of text are exceptional. The tutorial provided with the documentation is good, but the quality of the documentation is fair. The style program, which creates the format files for documents, is easy to use and is very well designed. *PowerText*'s file management capability is comprehensive and attempts recovery of information from bad disks.

On the minus side, *PowerText* isn't the easiest program to learn or use. Beginners beware. I crashed *PowerText* several times while learning it. When you are changing between the utilities and editor on the main menu, there are significant operational pauses. Many word processing programs are using more and more on-screen documentation, but *PowerText* is going in the opposite direction by making its menus and options appear as codes.

Recommended Applications

PowerText is a workman's tool. In spite of its substantial number of word processing features, it lacks the polish and ease of use of screen-oriented word processors. It seems an unlikely candidate for adoption by secretaries or corporate word processing pools. The user who has gained mastery of its many features will no doubt find it a versatile tool, but for those who have little experience with data processing jargon, text disappears into "buffers," quick deletions are called "zaps," and menus appear slightly hieroglyphic. An irritating period of getting acquainted lies ahead.

PowerText is a program for the individual with programming or word processing experience. Pioneers in cottage industries, solo entrepreneurs, students, and researchers might put *PowerText* to good use. The program works well for individuals who slug out correspondence in the quickest way possible and don't care how it looks on the screen. But *PowerText* possesses a complexity and awkwardness in use that is unacceptable to word processing professionals with large numbers of documents to produce.

POWERTEXT is a program for the individual who has programming or word processing experience.

Aesthetics

I've characterized *PowerText* as a workman's tool; aesthetically it's just that—rough and utilitarian. Prompts that appear on the screen are often short and cryptic. For example, the prompt line that appears during copying is:

```
>Copy: B(uffer F(rom file <esc>
```

This is not easy to understand. (It means you have three options: copying from the buffer, copying from a file on disk, or pressing the escape key to stop the copy process.) These kinds of prompts (and they all look this way) really give the sense that the programmer was trying to conserve the amount of memory taken up by program code. It's the user who loses in terms of comprehension.

The documentation carries the same sense of usefulness without ornamentation. Pages are crowded with information, and there are no illustrations, except for the same typed representation of the main menu, which appears repeatedly without change or emphasis. It's a rough job—not the slick, terse clarity other IBM PC documentation offers. There is room for improvement in Beaman Porter's presentation of *PowerText* to the user.

Beginners and experienced hands alike will want to examine *PowerText* carefully before deciding whether it is the word processor for them. **/PC**

Bill Grout writes computer documentation and has published articles in Microcomputing, Desktop Computing, 80 Micro, *and* 80 US Journal. *He has recently published a book with Alemany Press.*

The Benchmark Word Processor

With smooth and easy commands, The Benchmark *is all its name implies in word processors—and more.*

The Benchmark
MetaSoft Corporation
711 E. Cottonwood Ln., Ste. E
Casa Grande, AZ 85222
(602) 836-6160
List Price: $499

I purchased my IBM Personal Computer about 3 months ago and immediately started scouring computer magazines to compare prices and features of compatible word processors. As an electrical engineer my forte is digital design, and like most EEs in the field, I love to use computers. I had worked on a Scientific Data Systems (SDS) computer at work and had used its word processor frequently.

WIDOW AND orphan control keeps single lines at the beginning or end of a paragraph from being separated from the rest of the paragraph.

When I sat down to search for one that would fit my needs and budget, I set up some guidelines for comparing word processors. I wanted one that is easy to use and learn, has the most useful features for the money, allows me to print form letters, and works with other software such as a mail merge program. I immediately ruled out *EasyWriter* because a friend had had nothing but trouble with his, and I ruled out *WordStar* because I had played with



one at ComputerLand that was difficult to use and took too many keystrokes to start a function. I was looking for good, but when I tried out *The Benchmark* by MetaSoft, I found great.

Program Requirements

The Benchmark requires CP/M-86, 128K of RAM, and one disk drive. Two disk drives and about 256K of RAM improve the performance, but I found that the minimum requirements were adequate. A second drive allows you to append, copy, merge, and transfer part or all of one document on one disk drive to another document on a different drive. Additional RAM enables *The Benchmark* to reduce the number of disk accesses while you are working on a document, thus increasing your speed. CP/M-86 takes up 56K of RAM, and the word processor takes up 34K more; this leaves 38K for the document's RAM work space where the file is located while being edited.

The Benchmark allows you to choose from about 20 printer drivers to interface your printer to the word processor. The list below includes most of the popular dot matrix and daisy wheel printers on the market:

- General (CR/LF) Printer
- TI-810 Driver
- TI-820 Driver
- Centronics 737
- IBM Selectric or Backspace
- Tandy Daisy Wheel Printer
- Epson MX Series
- Diablo 1610/20 & Qume (Prop.)
- Diablo 1640/50 & 630 (Prop.)
- NEC 5500/7700 Series (Prop.)
- NEC 8023 Driver
- NEC 3500 Series (Prop.)
- C. Itoh Daisy Wheel Printer

Applications

Writers, small businesses, and secretaries could benefit from the IBM PC/*The Benchmark* combination. Easy standard commands allow the user to write, edit, print, append, merge multiple documents, use variable fields in forms entered from the keyboard at print time, and insert standard paragraphs into a new document. Other capabilities include column and

IBM® PERSONAL COMPUTER USER

CHARGE UP YOUR SYSTEM THE *SUPERWAY*

SUPERBUFFER — no more waiting for print out

- 64K Byte parallel printer buffer
- Stores 32 average pages
- IBM printer port compatible
- Port address selectable

SUPERBLASTER programs EPROM and store programs

- Up to 32K Byte EPROM socket
- Programs +5V EPROM
- Programming software included

Other fine products available

- Parallel printer board
- 13" prototype board

SUPERMEMORY — expand your memory power

- Up to 256K with parity
- 8/16K EPROM sockets for your own program
- RAM, EPROM address selectable
- Field expansion kits available at 64K increment

Order any Super product now, get a 13" prototype board for only $1 ($45 value)

RISK FREE — We back up our product the Superway

- *10 days money back if not satisfied*
- *Full one-year parts & labor warranty*

Dealer inquiries invited

I'd like to learn more. Send information **FREE** on:

- ☐ Superbuffer
- ☐ Supermemory
- ☐ Superblaster
- ☐ Parallel printer
- ☐ New products

Name _____

Street _____

City _____

State _____ Zip _____

Super Computer, Inc.
1710 E. Newport Cir., Suite P
Santa Ana, CA 92705
(714) 546-4866

Enclosed is my check for $ _____.
Please rush me:

Description		*Qty.*	*Total*
Superbuffer - 64K	@ $395.00*		
- 16K	@ $295.00*		
Supermemory - 64K	@ $295.00*		
- 128K	@ $405.00*		
- 192K	@ $515.00*		
- 256K	@ $625.00*		
64K Expansion Kit	@ $110.00		
Superblaster	@ $225.00*		
Parallel Printer Board	@ $ 75.00		
IBM to EPSON cable 6'	@ $ 20.00		
13" Prototype board	@ $ 45.00		
		Shipping	*FREE*
		Sales tax†	
		Total	

* Add $1 for prototype board
† Calif residents add 6% sales tax

IBM *is a trade mark of* IBM *Corporation*

nath functions, headers and footers, footnotes, numerous printing setups and styles, versatile tab functions for outlines and legal documents, centering, flush margins, and widow and orphan control. *The Benchmark* provides almost all the conceivable tools for creating and printing paperwork. Even large companies could benefit from *The Benchmark*. The power to control multiuser access to file networking (computers sharing files and talking to-

ANOTHER outstanding feature is the indexed document.

gether) is made possible. For some big businesses this is a necessity.

MailMerge, another program from MetaSoft, works with *The Benchmark* to produce labels and form letters merged with data files and/or keyboard-entered data. It offers a number of functions that could increase the productivity of many businesses. Following are some of these commands considered in more detail.

Editing

When you first enter the word processor, the following choices are presented: Create, Revise, View, Print, Merge, or go to an additional procedures menu. Create and Revise are used most often. If you select the Create mode, the program asks for a file name (30 characters), operator's initials, and author's initials. A volume number and revision letter are automatically attached to the file. You are sent into Insert mode as soon as you finish entering this, and the document can be started.

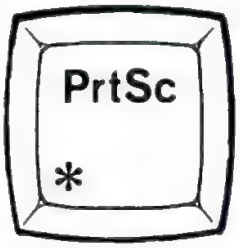
Since the word processor has automatic word wrap, you don't have to hit a carriage return at the end of each line unless you are at the end of a paragraph or want to end a line purposely. The screen scrolls both vertically and horizontally as you type; you can set the number of lines to scroll horizontally.

When you finish inserting, one keystroke takes you back to what *The Benchmark* calls Control mode. The word processor is always in either Control mode or

IBM PC owners... have your cake and eat it too!

ConvertaBuffer

IT'S A CONVERTER. The print screen functions of your IBM PC require the use of the standard parallel printer adapter. However, the letter quality printing desired for word processing is primarily available from printers with serial interfaces.



ConvertaBuffer enables you to use the print screen key with a serial printer by converting your PC's printer output from its parallel format to a serial format compatible with your Diablo, NEC, or Qume.

IT'S A BUFFER. Letter quality printers are much slower than your PC. ConvertaBuffer accepts data as fast as your PC can send it — 1,000 characters per second; stores up to 21 minutes of data in its built-in memory buffer; and then sends it to the printer at the printer's slower speed — 10 to 60 characters per second. This allows you to go on to other work without waiting for the printer to finish printing.

21

Easy-to-Install ConvertaBuffer comes with built-in cables which plug directly into your PC's printer adapter and your printer's serial interface without removing the cover of the system unit.

IF YOU WANT TO USE ALL OF YOUR PC, GET CONVERTABUFFER.

IBM is a trademark of International Business Machines Corp
Diablo is a trademark of Xerox Corp
NEC is a trademark of NEC Information Systems, Inc
Qume is a trademark of Qume Corp

(please print or type)

Please send me:		Quantity	Total
☐ CB-8 (5 min./8K buffer)	@ $229.00	_____	_____
☐ CB-16 (10 min./16K buffer)	@ $269.00	_____	_____
☐ CB-32 (21 min./32K buffer)	@ $299.00	_____	_____
☐ Further information			
Ct. residents add 7½% sales tax			_____
PLEASE ADD $5.00 per unit for shipping/handling			_____
		TOTAL:	_____

Name _____

Street Address _____

City _____ State _____ Zip _____

InterBank# _____ (4 digits above your name on MasterCard™) Charge Card# _____

☐ Check/Money order enclosed ☐ MasterCard ☐ VISA

_____

Credit Card Signature Card Expires

MAIL TO: **von Leivendyke Enterprises**
Silvermine Avenue
Norwalk, Connecticut 06850

(203) 846-4973

Plug-in to mainframe power, performance, and multi-user capability. Corvus Omninet™— the standard in local area networks—and Winchester mass storage supply the missing elements that personal computers need to become intelligent work stations in versatile distributed-resource networks.



Corvus Omninet links up to 64 of the most popular microcomputers over distances up to 4,000 feet at speeds of 1 million bits per second. Omninet provides a total networking solution with proven Constellation software: multi-user access, security, spooling to common printers, intercommunication, and sharing up to 80 million bytes of Corvus mass storage.

Thousands of Corvus network and mass storage systems are solving problems worldwide in installations ranging from Fortune 500 companies to the smallest businesses, professional offices, and educational institutions.

Make the Corvus connection now at your local Corvus dealer.

CORVUS SYSTEMS

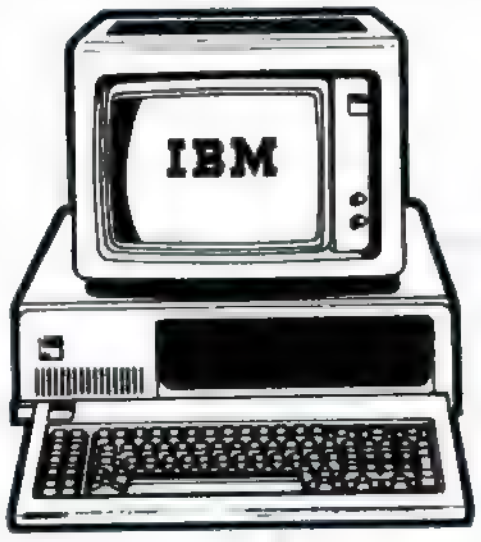
THE CORVUS CONNECTION

Networks and mass storage to transform your personal computers into powerful multi-user systems.

Action mode. In Control mode the word processor is waiting for a command or is prompting you for parameters to set up the screen or the printout. The word processor is in Action mode after a command has been entered and the function performed. For instance, if the document you are working on is displayed on the screen and the word processor is waiting for you to enter a command, then you are in the Control mode. To delete text, move the cursor to the first character to be deleted and press D. Now you are in the Deletion mode, one of many Action modes, and the word processor is waiting for you to define the text to be deleted. The current mode is always displayed in the top right portion of the screen along with the name of the document, special parameters set, character count, line count, and current page. Although this may sound confusing now, it's very easy to pick up, especially since almost all the commands for adding and editing text are executed with only one keystroke.

The Benchmark provides all the editing commands to insert, delete, overtype, move, copy, and exchange text. Inserting text can be done in the Insert mode or the Overtype mode, in which you write over the existing text. Deleting, copying, moving, and exchanging text all work similarly. Position the cursor to the first character you want to edit, and then enter the appropriate command (D for delete, C for copy, etc.). Next define the block of text to be edited by pressing the right arrow for one character at a time, the space bar or tab for one word, the carriage return for one line, or any character that defines the text up to that character. The affected text is highlighted in reverse video so that you can be sure you are working on the intended text. This way you can edit anything from a single character to a whole document. Once you have finished defining the text, press the F10 key to execute the command.

The Search and Replace commands are more powerful than they are in most word processors. After you press S to search, *The Benchmark* asks you to enter the text to be located. The search can be done by either upper- or lowercase or both. When you are looking for whole words, *The Benchmark* searches for a space on both sides of the word. For example, when searching for *list*, it will not find *listen*. Another option is to search without display, which is twice as fast as searching



IMPROVE YOUR PC'S PERFORMANCE:

Use *Versa*-Ram® and *Versa*-Ware® Products!

Expandable Memory boards add memory capacity as your system grows...

- The *Versa*-RAM offers from 64k to 512k bytes of error-checked memory on one board. Entirely assembled and tested, full year warranty. Fully socketed for future expansion and completely compatible with all available IBM hardware and software.
- The *Versa*-RAM-*Plus* is a memory+IO board, expandable 64k-to-256k, with two RS-232 serial ports, one parallel printer port for MX-80, etc. Supports all IBM software.

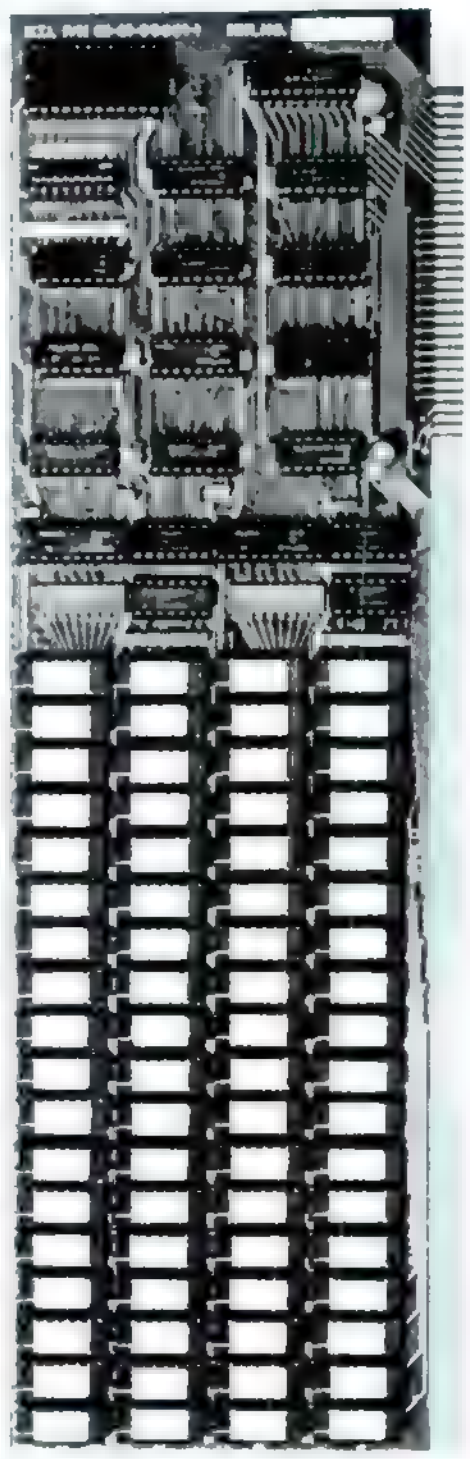
Note: *Versa*-RAM products are also compatible with Columbia Data Systems.

Fully-populated memory boards, 64k and 192k—high quality base-address selectable boards at low prices.

***Versa*-Ware RAM Disk/Spooler package** speeds up your IBM system. RAM Disk allows emulation of one or two 160k floppy drives or one 320k floppy drive in "no-wait" RAM. RAM Spooler allows use of RAM as a printer buffer. Computer operates at full speed while printer continues to print!

Cable extension set (3 ft. long), available for IBM keyboard and monitor.

IBM is a trademark of International Business Machines Corp.



MTI products are available at participating ComputerLand and other IBM PC dealers. For more information and name of your nearest dealer, call us toll free 1-800-348-3377 (Indiana 219-664-5741).

Memory Technologies, Inc.
25 Main Street · Box 6A, Twelve Mile, IN 46988
Toll free 1-800-348-3377 (Indiana 219-664-5741)

indigo
data systems, inc.



PC MultiBoard™
Up to 256K bytes of reliable parity checked system memory plus an IBM compatible RS-232 serial communications port and a real time clock/calendar. Three of the most frequently desired functions are integrated on a single board to keep your budget in line and your expansion slots free. And the **PC MultiBoard™** is the perfect mate for **Spool-It™** and **Drive-It** . One year warranty. 64K-$495, 128K-$640, 192K-$775, 256K-$895.



Spool-It™
Utilize up to 64K of extra memory as a printer buffer and eliminate valuable time spent waiting on the printer. Works with VisiCalc®, Super-Calc™ WordStar™, EasyWriter™, Peachtree, BPI, BASIC, and most other PC DOS software. $44.95

Drive-It™
Eliminate time spent waiting on disk drives by converting 32K to 320K of extra memory into an ultra-fast drive. Supports all standard DOS functions. $59.95

Print-it ™ (IBM/Epson printers)
The graphics screen print capabilities that IBM omitted are provided by this unique screen print utility which dumps either monochrome or color screen images (text and graphics) to IBM/Epson printers (with graphics installed). Other features include full IBM special character set support, shading, and print abort. Expanded, rotated, and inverse modes are available. $44.95

Color-It™ (Prism/IDS printers)
Color printing has never been easier. **Color-It™** provides the same screen print capabilities as **Print-It™**, but for the IDS Prism color printer. Up to 8 colors will be reproduced as displayed on the screen. Also supports the non-color IDS 460/560 and Microprism printers. $49.95

Software by M.A.P. Systems Inc.

The **It** series of software can be used individually or in combination to get the most out of your application software.

Indigo Data Systems, Inc. is dedicated to making USEFUL and USEABLE products for the IBM PC. Each product is designed with performance, compatibility, value, and quality in mind. We insist on it - So should you.

Indigo Data Systems, Inc. 100 E. NASA Rd. 1 Suite 107 Webster, Tx. 77598 (713) 488-8186.

HOLIDAY SPECIAL

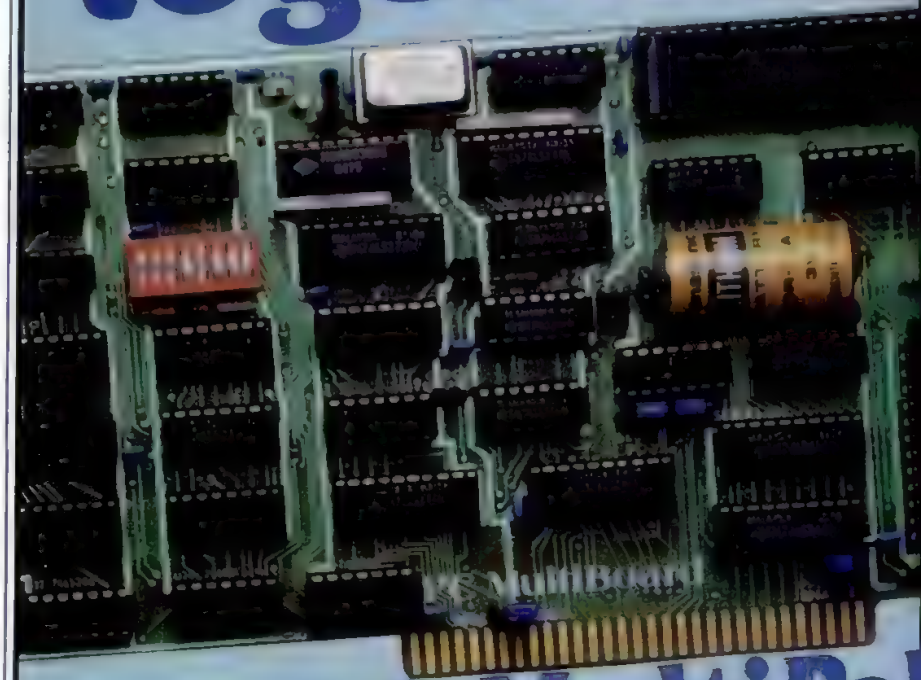
256K PC MULTIPAK FOR THE PRICE OF 192K

Reg. $895 **$775**

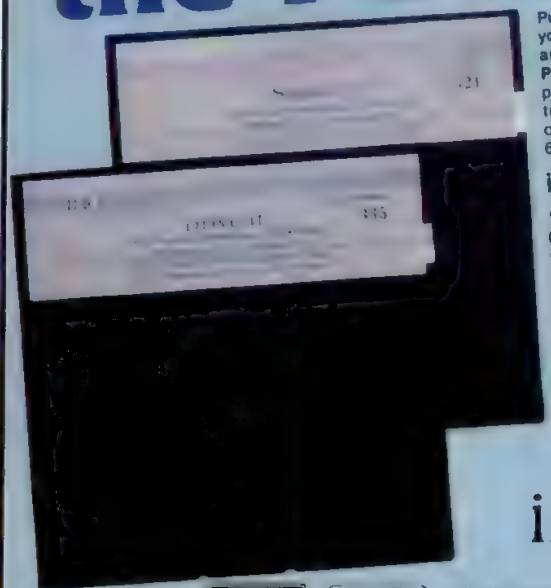
Offer good thru Jan. 31, 1983



Putting it together...



the PC MultiPak



Put the expansion potential of your IBM PC to you today with this value packed combination of and software. **The PC MultiPak** combi **PC MultiBoard** with **Spool-It** and **Drive-It** - two products designed to convert your extra money time 64K-$495, 128K $640, 192K $775, 256K-$89 ordered without clock option for $40 less) 64K Memory Expansion Kit-$150

includes:

- **PC MultiBoard ™**
  64K 256K RAM •SERIAL COMMUNICATIONS P •CLOCK/CALENDAR
- **Drive-It ™**
  RAM BASED DISK DRIVE EMULATION SOFTW
- **Spool-It ™**
  RAM BASED PRINT BUFFERING SOFTWARE

A $600 VALUE ONLY **$49**

indigo data systems, in

VISA MasterCard

Indigo products may be found at fine computer stores nat

OR CALL COLLECT (713) 488-8186

with display. You can even put "anything-in-this-space" characters in your text. For example, you can search for any four-letter word that starts with *s* and ends with *n* by entering s??n. *The Benchmark* would stop on such words as *spin*, *span*, and *soon*. You can redefine the anything-in-this-space character if you need to look for a single "?". The Replace command is essentially an automatic Search command. If, for example, you typed in "Basic" instead of "BASIC," you could enter the change before initiating the search. With this replace command, the program automatically makes the change and continues without stopping at the word.

Figure 1: The Benchmark directory during a print command

```
      File  Title              Size  Auth Oper    Created      Revised      Time
><    01A   Letter to Jones    8K    JME nrg      30-NOV-81    30-NOV-81    20:11
><    02A   Smith Proposal     1K    JME nrb      04-MAR-82    15-APR-82    11:40
><    03C   Jacob Will         9K    GDH mmh      12-MAR-82                 13:56
            (Draft)
><    05F   BENCHMARK          15K   GDH gdh      15-SEP-82    26-SEP-82    23:01
            Review
><    05E   BENCHMARK          13K   GDH gdh      15-SEP-82    24-SEP-82    05:15
            Review
                                   END OF DIRECTORY
ENTER "P" in Column 1 to Select All Documents to be Printed
F10 to continue. F1-Display 01. F2-Scroll. or ESC to return
```

The Tab commands allow you to center columns of numbers and text, set up standard indentations, and set up flush-right tabs. This is helpful for producing outlines and legal documents. Other commands include those for moving and erasing columns of text or numbers, and adding, subtracting, multiplying, and dividing numbers in columns.

If your document needs headers, footers, or footnotes, *The Benchmark* has the commands. It also provides widow and orphan control. (Before I was involved with word processors, I thought people were talking about an adoption agency. Actually, widow and orphan control keeps single lines at the beginning or end of a paragraph from being separated from the rest of the paragraph.) Centering text is another command that can be executed with only one keystroke. *The Benchmark* has many useful commands for controlling how your printout looks, in addition to the vast array of editing commands.

Printing Features

A multitude of printing options is available as long as your printer supports the options. Everything from simple underlining to supporting different sheet feeders is provided. The standard print options are chosen from a menu displayed on the screen. The print format can be changed many times and in any place in a document. Special print formats used repeatedly can be defined to a library with only two keystrokes, so as to set up a format containing numerous parameters.

In the print format you can define text to be underlined, bold, overstrike, shadow, normal, or a combination of these styles. The proportional printing, left and right margins, first and last printed line, line spacing, number of characters or lines per inch, and the sheet feeder selection can be set easily. *The Benchmark* also prints subscripts and superscripts. Another feature for people with printers that have removable print wheels is the Automatic Print Stop command. When this command is used during printout, the printer stops to allow the user to change the print wheel. Press C to continue the printout when the new wheel is installed.

You can print your document a single line at a time, a group of lines at a time, a page at a time, or the entire file. Printing multiple files, a standard feature, can come in handy if you have to split up a document into more than one file because it is too long to edit or store in a single file.

File Management

MetaSoft obviously put extensive thought into file management within the word processor. Once you boot your computer with CP/M-86 and start the word processor, all file management is done in the program. The first time a new disk is used to store documents, a Storage Unit, or SUN, has to be set up. The SUN is actually one large CP/M-86 file in which you store many documents. With a floppy disk system, each drive is set up to hold one SUN. Several SUNs can be put on a hard disk drive. To name your documents, the word processor gives you 30 characters—better than the eight that CP/M-86 allows. It also assigns a volume number and revision letter. The operator's and author's initials are required, and they are useful for keeping track of documents when several people are using the same system. If you are revising a document, the old name is shown on the screen as the default for the new document. The name can be changed or retained, in which case the revision letter automatically goes up one.

The Additional Features option in the main menu gives you many of the available file management commands. This menu allows you to copy files from one SUN to another, delete any files, and read CP/M-86 files into a SUN, or vice versa. All these commands allow you to work on multiple files. You can delete any or all of the documents on a SUN at once. *The Benchmark* prints the command and the document's title at the bottom of the screen. You can also set the time and date from this menu.

When you are revising, viewing, or merging documents and you don't remember the volume number and revision letter of the document, just press [F10] and the entire directory for the selected SUN will be displayed. The name, volume number, revision letter, size, author, operator, date created, and date and time of last revision are displayed for each document. This information is more helpful than that supplied by CP/M-86. The same directory is displayed for copying, deleting, or printing. To copy multiple files, put a C in the first column of each document you want to

WITH ONE- and two-keystroke commands, The Benchmark is quick and easy to use.

IBM
personal computer
UCSD
p-System™IV-1

A superior implementation of the UCSD p-SYSTEM is available NOW for your IBM Personal Computer.
Network Consulting has added many features which the professional programmer will find useful. These features are not available from any other sources.

- Hard disk support for Corvus, Tall Grass Technology and others
- 25% more floppy storage, without adding or modifying hardware, retaining compatibility with standard IBM diskettes
- Double sided/double tracking/fast stepping floppy disk drive support
- RAM disk support (uses up to 512k RAM)
- Adaptable system support for adding custom I/O drivers
- Remote Terminal support
- XON/XOFF flow control for serial printers
- Disk write verification
- and more!

Standard p-System features include:

- Program chaining
- Standard I/O redirection (including command files)
- Dynamic program overlays
- Support for asynchronous processes and concurrency primitives in Pascal
- Fast Pascal, Fortran and Basic compilers, all producing universal p-code programs
- A powerful screen oriented editor that runs in both programming and text editing modes
- A Native machine Code Generator that processes your Pascal, Fortran and Basic programs to convert parts of them to Native machine code
- Dynamic runtime binding of separately compile programs and units.
- Turtlegraphics for easy graphics displays
- Print spooler for background printing
- Symbolic debugger
- Extended memory support
- A library of program modules and other utilities

48 HOUR DELIVERY — CALL NOW!

UCSD p—SYSTEM from Network Consulting

The only serious choice for business

TM The Regents of the University of California

MasterCard VISA

Network Consulting Inc.
A106 - 1093 W. Broadway
Vancouver, B.C.
Canada V6H 1E2
(604) 738-3500

copy. Figure 1 is an example of a directory shown during a print command.

The word processor is designed to do word processing, but MetaSoft says you can work on BASIC or assembly files too. You have to turn off the automatic word wrap, however, and set the left margin to column 1 to work on these files. When you get done editing or creating this kind of file, you have to copy it to a CP/M-86 file to use it. All in all, the file management system is excellent. Everything is menu driven, and the commands flow smoothly.

THE "dangerous" commands always ask you to confirm that you know what you are doing.

Efficiency

The combination of several of *The Benchmark*'s features results in a quick and efficient word processor. Almost 75 percent of the commands are executed with only one keystroke; the remaining 25 percent can be executed with two. *The Benchmark* uses what MetaSoft calls "panels" to prompt the user for setup parameters for the page layout, printout style, and tab lines. After you strike one of the function keys, the document you were working on disappears from the screen and is replaced by a format with the respective parameters for the selected panel. Default values are already entered for all the parameters, so you have to change only the parameters you want to alter.

Once you have entered your changes and pressed [F10], the word processor brings the document back to the screen exactly as it was when you entered the panel. Only on the line where you entered the panel is there an indication that you have altered one of the three panels; A "#-Page Format" line will appear for a page layout change, a caret will appear before the text when the print style is altered, and "....T....T....T (etc.)" will appear when you enter a new tab line. You may think that that sounds great, but that entering a new panel must require more than two keystrokes. It does the first time you enter it but after the initial panel information entry you can save the entire panel's parameters to a single key (a-z, A-Z) by using the Library command. You define the #-Page Format and assign the format to a key the same way that you defined text to move or delete when editing. For example, after you have set up the print panel for underlining, define the caret symbol and assign it to the letter *u*, and assign the normal print to the letter *n*. The next time you need to underline while inserting, press [Esc] and u, and the text will be underlined until you press [Esc]*n*, which sets the print back to normal. You can even assign many formats and lines of text to a single key, but the total text defined for one key must be less than 2,000 characters.

Another feature that increases The *Benchmark*'s speed is the way it can jump through the text to find something. The Jump command lets you go to any page in the document without scrolling through each page in between. Being able to set the number of lines to scroll horizontally makes the scroll adjustable to your particular style. The blind search also speeds things up. Again, the different commands and menus flow smoothly and logically.

Outstanding Features

The Benchmark will not come up short on capabilities; few features are left out. From simple inserting and deleting to creating form letters and legal documents, the tools are available to handle small- and large-business needs.

One criterion for a good word processor is the ability to handle form letters. *The Benchmark* provides this capability in several ways. One method is what MetaSoft calls the "rapid form fill-in," which uses the Quick command. You create your form with "[variable name]" in the locations where you want to fill in information to personalize your forms and letters. When you want to use your form, use the View option from the main menu and press Q for quick variable fill-in. You have to turn on the interactive print option, which prints a screen of text as you scroll through it. Each time the word processor finds a "[variable name]" it will stop and automatically enter the Insert mode for you to fill in the variable name. As you proceed through the document, the

changes to the variable will be printed along with your form.

The second way is by using the Merge option from the main menu. This option is similar to the rapid form fill-in method, but differs in that you can enter only variable information in the Merge mode and you can edit the form and the variables in the rapid form fill-in option. You again create a "pattern" document, or form, with "[variable name]" where you want to enter information. When pressing M for Merge from the main menu, you will be asked whether you want to merge information from the keyboard or from an information file. You need MetaSoft's *MailMerge* program for the latter, so if you don't have it, you need to enter from the keyboard. The next prompt asks if you want to print the merged document, save it on disk, or both. Then the word processor will travel through the pattern document and stop to ask you for the variable information as it finds it.

Another outstanding feature is the indexed document, a group of paragraphs or sets of paragraphs that each have a 10-character "tag" identifying that collection of text. These tags can be inserted individually into another document or can collectively create an indexed document. To use the indexing feature, for example, you create a pattern document with "[tag name]" where you want the selected paragraph to be. A lawyer could create an entire will by entering the following: [will top][declarat.][wife's dec][property][dispositn.]. Each indexed paragraph would be assembled in the order entered. Once you have your pattern document ready with the indexed tags where you want them, you Attach (A) the indexed document and do Quick search (Q) and the document will be assembled.

The Library feature is my favorite. Being able to assign formats and groups of commands to a single key is very useful.

Using and Learning

Even though I am not a rookie (having used another word processor before), I am not an expert either. It is a tribute to the simplicity of the program that I was writing, editing, and printing letters and forms in only 2 days. The only problem I had was with the manual. The section on setting up SUNs to store files and CP/M-86 features appears to be added as an afterthought.

I like the way the manual is divided into two sections: the "Get-You-Up-And-Running" section with the basics and the "Advanced Features" section. Some chapters could have used more examples, however, and the manual needs an error appendix to explain the different errors, some possible reasons for them, and what to do about them. The command dictionary needs some reference for where to look in the manual for more detailed explanations.

With one- and two-keystroke commands, however, *The Benchmark* is quick and easy to use. There is a built-in help feature in case you forget a command and what it does. Press ? from the Command mode, and a list of instructions appears on the screen until you find what you need and press [Esc] to return.

Shortcomings

The disadvantages of this word processor are in its requirements. Many people don't have CP/M-86 and 128K of RAM. You can get both easily enough with money, but it would be nice to run the system on 64K and on PC-DOS. MetaSoft is working on a version that would run on DOS, but the 128K RAM minimum would have to remain. I have had only one real operational problem so far. One of my storage units was messed up and even though I could enter the document's name and enter the Revise mode, the second I tried to do anything with the document, the system would give me a "Write-Error" on that file and then go west. I had to reboot the system to get out of that situation. After this had happened to me several times, I recreated my storage unit, copied my files back into it, and everything was fine. I still don't know what caused this problem, but it indicates that an error section would be helpful.

THE SYSTEM has style and manners, and possesses the tools to do the job.

Aesthetics

I was generally very pleased with *The*

A SMALL GRAPHICS PACKAGE
simple
complete
consistent
efficient

INTERACTIVE GRAPHIC COMMANDS
move(to) draw(to) turn(to) scale read input
fill circle polygon color
put text put variable set origin post segment

SEGMENTED DISPLAY FILE CONSTRUCTION
combine commands into segments
combine segments
nesting and recursion supported
segments optionally on disk

AN APPLICATION SOFTWARE DEVELOPMENT TOOL
interactive screen design
extensive use of single key commands
optional joystick input commands
write/read screen from any BASIC program
optional segment translation to equivalent BASIC graphic statements for separate use

for use with IBM personal computer, 64K memory, one disk, dos, color adapter

package price of $75 includes diskette and manual

SJM METHODS, INC.
108 PERRY STREET
NEW YORK NY 10014

mc/visa accepted
(212) 691-1517

systemics

EASY TO USE SOFTWARE for your IBM PC 64K, Monochrome, Two Drives

PRO-PICK

- Pro football predictions!
- Fast entry-minutes per week
- Customize your predictions using your own ideas on home vs. away, etc.
- 1982 schedule & data on separate disk
- Examine pointspreads, over/under scores.
- Use year after year
- Excellent gift for fans

EZLabel +

- Now in fast compiled BASIC
- Single-key auto-entry
- Fast search & sort
- Prints 1 or 2 up labels
- 1000 addresses per diskette
- Sort by zip code or last name
- Sort by user defined codes

EZMemo +

- Now in fast compiled BASIC
- Custom form letters using addresses from EZLabel files
- Easy-to-use word processing
- Create, save & recall memos
- Centering, justification
- Print in any IBM PC type style
- Line by line editing

At your dealer, by mail below or call:

313 851-2504

systemics
3050 Spring Street
West Bloomfield, Michigan 48033

Name _____
Address _____
City, State, Zip _____

☐ PRO-PICK $75.00
☐ EZLabel + $49.95
☐ EZMemo + $49.95

(Michigan residents add 4% sales tax)

Total amount enclosed $ _____
or charge my ☐ *VISA* ☐ *MasterCard*
Card # _____
Exp. Date _____ Interbank # _____
Signature _____

Benchmark. I found it to be a great word processor. The menus and screen formatting create a user-friendly system. The "dangerous" commands always ask you to confirm that you know what you are doing. If I had to choose a word to describe *The Benchmark*, I would choose "professional." The system has style and manners, and possesses the tools to do the job. MetaSoft's word processor may indeed be the benchmark against which all other IBM word processors will be compared for some time to come. **/PC**

George D. Hughes, Jr. is an electrical engineer who works with computers at Poly Scientific, a division of Litton Industries, Inc. in Blacksburg, Virginia. He recently started his own company, Hughes Integrated Systems, Inc., and is working on his MBA at Virginia Tech.

SOFTWARE/HARRY MILLER

Write-On!

A low-cost word processing option that offers file merge, easy-to-use outline indentation, and specialized scriptwriting.

Write-On!
Datamost
9748 Cozycroft St.
Chatsworth, CA 91311
(213) 709-1202
List Price: $129.95

Using the *Write-On* word processor is like wearing a jacket from a thrift store: It may not be the best of its kind, but it may suit your needs and eventually become a real favorite.

Judging *Write-On*'s line-oriented editor objectively is difficult after several years of being spoiled by the "what you see is what you get" approach of other programs. However, *Write-On* has features such as mail merge and temporary margin that are usually found on much more expensive programs.

Requirements

Write-On is written in Disk BASIC, so one disk drive is required. The manual describes a simple procedure for creating a master disk that contains the BASIC .COM, *Write-On*, editor, and printer programs. The program requires only 48K of RAM, although 64K is recommended. *Write-On* can be used with any kind of printer.

At start-up the simple menu-driven installation procedure asks whether the printer requires any special control characters and whether a separate line feed character is required at the end of each line. If the user's printer provides a backspace function, the program will accommodate underlining and boldface.

Editing

Write-On's editor concentrates on a single line of text at a time. An asterisk in the left margin marks the current line on which changes, deletions, inserts, block markings, and moves are made. The current line is also the place where other files may be merged into the open file. To carry out these actions, the asterisk is moved to the desired line, and the action is described on a command line at the top of the screen. The asterisk can be moved a single line, a specified number of lines, or a screen at a time, or it can be moved to the top or bottom of the text.

This process is very flexible, but there are a few catches. There are no line numbers and, since the screen is emptied and redrawn at every command, keeping track of the desired line is somewhat difficult.

As with any word processor, a good part of *Write-On*'s power is in its ability to manipulate blocks of text, and the program does move, copy, delete, or repeat blocks well. The problem is that it doesn't display the boundaries of the marked block. (Fingerprints on the screen won't be from the kids; they'll be from their parents counting

SIMPLICITY:

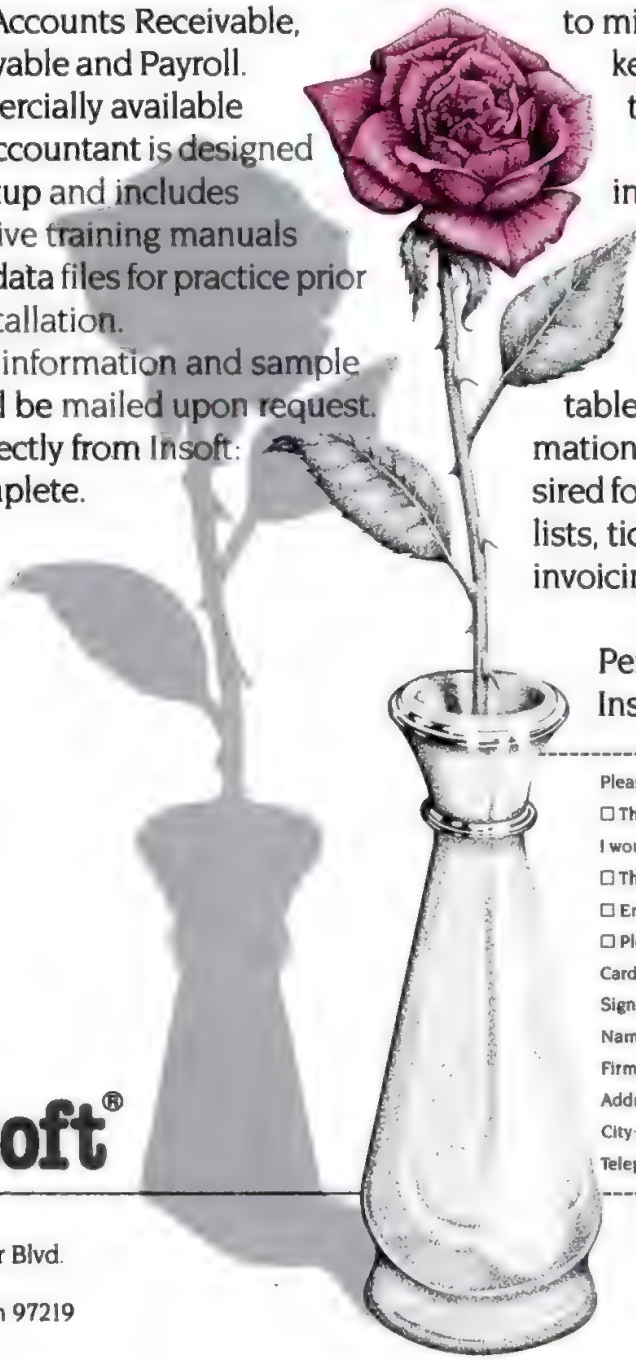
THE ULTIMATE SOFTWARE SOPHISTICATION

THE ACCOUNTANT™ is your alternative to costly and inflexible accounting systems. Organized into four packages, The Accountant is fully menu driven and includes General Ledger, Accounts Receivable, Accounts Payable and Payroll. Using commercially available forms, The Accountant is designed for easy startup and includes comprehensive training manuals and sample data files for practice prior to actual installation.

Detailed information and sample printouts will be mailed upon request. Available directly from Insoft: $365.00, complete.

DATA DESIGN™ is, quite simply, the most easy-to-use data base manager available. Fully menu driven and complete with help screens, Data Design uses the function keys to minimize learning time and operator keystrokes. Designed specifically for the Personal Computer, Data Design is as powerful as it is simple. All information is entered, viewed, changed and printed through user-created forms. Each form may have up to 40 actual and computed fields, and since each table may use as many as 26 forms, information is always ready in precisely the desired format. Data Design is ideal for mailing lists, tickler files, customer/patient records, invoicing and accounts receivable.

Available in October at your local Personal Computer dealer, or from Insoft: $225.00.



Please send me more information about.
☐ The Accountant ☐ Data Design
I would like to purchase.
☐ The Accountant for $365 00 ☐ Data Design for $225 00
☐ Enclosed is my company check/money order
☐ Please charge my ☐ VISA ☐ MasterCard
Card No. _____ Exp Date: _____
Signature: _____
Name: _____
Firm: _____ Title _____
Address: _____
City: _____ State: _____ Zip _____
Telephone _____

insoft®

Insoft, Inc.
10175 S.W. Barbur Blvd.
Suite 202B
Portland, Oregon 97219
503/244-4181

Both packages support the IBM (Epson) printer and a variety of hard disks.

How to ge your f



You're not alone, you know.

We've all been through that same excruciating moment when we realized that we were going to have to learn a lot more than we wanted to know about programming, in self-defense.

But most of us survived.

Many of us with a little bit of help called dBASE II, the relational database management system (DBMS) for micros.

The best defense is a strong offense.

Don't get seduced by BASIC, because basically BASIC is weak. And to make it do anything useful can take 10 times as much programming (and time) as with dBASE II.

dBASE II is much easier because it's a relational DBMS, and you control your information with powerful, English-like commands.

With a word or two, you CREATE databases, APPEND new data, UPDATE, MODIFY and REPLACE fields, records and entire databases. DISPLAY some or all of your data for any conditions you want to apply. Organize months worth of data in minutes with REPORT.

You can prepare your forms and formats precisely the way you want them. Do calculations on fields, records and entire databases with 10-place accuracy.

And do even more with dozens of other commands.

Here's the catch.

With any language, you'll need to understand relational operators ("less than," "greater than," "equals") and a bit of logic ("or," "and," "not").

With dBASE II, you'll also get an easy way to make choices (IF..THEN..ELSE) and a powerful way to perform repetitive tasks (DO WHILE..).

With these tools, you're ready to tackle your accounting and time billing, project management, and any other data handling and record keeping. You can work interactively and get your answers right now. Or save your instructions and repeat everything with two words: DO Manhours, DO ProjectX, DO whatever has to be done.

Use dBASE II to help make your choice.

If you've got a 48k CP/M micro with a disk drive (96k IBM PC), send us $700 ($400 for a 56k Apple). We'll send you a copy of dBASE II to use free for 30 days.

the best of micro.



Instead of just poring over a manual, run it and make certain that dBASE II does what you need done.

Then if you find it isn't right for you, send it back and we'll return your money, no questions asked.

But we know that you'll probably keep it.

Because having dBASE II is like having a black belt in micros.

Call (213) 204-5570 today or drop by your local computer store for the rest of the story.

Ashton-Tate, 9929 Jefferson Blvd., Culver City, CA 90230.

Ashton-Tate

©1982 Ashton-Tate
CP/M is a trademark of Digital Research

ADD PERSONALITY™
3270/BSC® & 3270/SNA/SDLC® PERSONALITY™ SERIES FOR IBM® PERSONAL COMPUTER



PERSONALITY™ SERIES offers fully IBM compatible multi-function adapters and software with exceptional flexibility and upgradeability.

PS-3270 PERSONALITY™ SERIES is the first fully IBM compatible **3270/BSC/SNA/SDLC** emulator. Utilizing dedicated PS-GCA communications adapter, **ABM's 3270/BSC** emulator and **CSI's ACCESS®/SNA** emulator, it interfaces with **3704/3705** communication controllers and emulates **3276 Control Unit Display Station** and **3274 Control Unit** supporting 3278-2/-12 displays and 3287-2 printers.

PERSONALITY™ SERIES HARDWARE

- **PS-3276/BSC** Control Unit Display Station and 3287-2 printer emulation **$1295**
- **PS-3276/SNA/SDLC** Control Unit Display Station and printer (LU2/LU3) emulation **$1595**
- **PC-3276/BSC/SNA/SDLC** Combined emulation with interactive protocol switch **$1895**
- **PS-3274-51C/BSC** **$695**
  Adds 3274-51C control unit supporting 12 downline IBM PC's emulating 3278-2 displays.
- **PS-3274-51C/SNA/SDLC** **$695**
  Adds 3274-51C/SNA/SDLC/LU2 control unit supporting 12 IBM PC's emulating 3278-12 displays.
- **PD-3276/BSC & PD-3276/SNA/SDLC** Batch disc emulation upgrade **$145**
- **PS-GCA** **$995**
  General purpose communications adapter featuring Z80B processor, 64KB memory, 4 programmable serial ports (sync/async), 1 parallel printer port and 8 programmable timers.
- **OMNI-BOARD*** **from $205**
  Featuring up to five functions on one board, the OMNI-board provides the capabilities of an expansion chassis on a single board. Fully IBM compatible adapters provide a parallel printer port, up to two RS-232 asynchronous communication ports game adapter which is compatible with IBM software and connects to two Apple compatible joysticks and the clock/calendar option with rechargeable battery backup. No need to return to factory for upgrades - options are easy to install. Full documentation and software to read, set and automatically reset the system clock to the correct time and date automatically upon power-up included.
  Printer, game & clock..... **$295** Printer, game, clock & RS-232..... **$395**
  Printer, clock & 2xRS-232..... **$435** Printer, game, clock & 2xRS-232 ..... **$485**
  Call for other configurations prices.
- **TELEPHONE RECEPTIONIST ADAPTER** **$995**
  The telephone receptionist adapter connects directly into a modular phone jack and provides a fully featured 300/1200 baud Bell 103/202 compatible modem with auto dial and auto answer. A voice synthesis unit and touch tone decoder provide interfaces for automatic telephone answering and remote data input. Audio and control outputs enable the IBM PC to function as a telephone answering machine. Configurable.
- **BSR-X10™ CONTROL MODULE** **$95**
  This integrated module plugs into the DIN cassette connector of the IBM Personal Computer and provides full remote control of 256 BSR appliance or switch modules and comes with sample software listing.
- * **COLOR TO MONOCHROME INTERFACE CABLE MODULE** **$95**
  Plugging conveniently between the IBM monochrome display and the RGB connector of the IBM color graphics adapter, this integrated module gives you the capability to use all the graphics and character line features of the IBM color graphics adapter with IBM monochrome display. **(Actual photo above)*
- **APPLE™ JOYSTICK INTERFACE MODULE** For 2 APPLE joysticks **$29**
- **PROTOTYPING BOARD** With bracket and DB25 connector provision **$45**
- **TWO SLIMLINE DISK DRIVES** plug into single IBM PC disk drive opening. Second drive provided with mounting bracket.
  Dual sided/dual density disk drive..... **$349** Dual sided/quad density disk drive **$449**
- **PLUG-IN 5MB WINCHESTER DISK, ADAPTER & SOFTWARE** **$1495**

PERSONALITY™ SERIES SOFTWARE

- **DISKSAVER™ PROGRAM** **$49**
  This elegant utility program allows you to create backup copies of most software protected diskettes. It offers the ultimate protection against accidental damage to your valuable software and comes with full documentation. The Disksaver™ itself is not software protected.
- **PASCAL GRAPHICS LIBRARY** **$95**
  This IBM PASCAL compatible library provides full access to the graphics of the IBM color graphics adapter. All graphics functions supported by the IBM BASIC are implemented as PASCAL procedure calls. Full documentation and software examples are included.
- **PASCAL SUPPORT LIBRARY** Provides full peripheral control for the IBM PC from PASCAL **$49**

ABM™
BUSINESS AUTOMATION THAT MAKES SENSE.

Automated Business Machines, Incorporated
23362 Peralta Drive, Laguna Hills, California 92653 USA
(714) 859-6531

All ABM, Inc. products come complete with a one year warranty and IBM compatible documentation.

Enclose Check, Money Order or Visa/Mastercard Number and Exp. Date — Calif. residents add 6% sales tax

*Free shipping and handling on cash orders — **Dealer and OEM Inquiries Welcome***

ASK FOR ABM PERSONALITY™ PRODUCTS AT YOUR LOCAL COMPUTERLAND STORE.

lines.) No method is provided for determining where a printed page is going to end until the file is printed. No widow or orphan protection exists for avoiding very short lines left hanging at the top or bottom of a page.

Write-On includes an acceptable Global Find and Replace feature, complete with a "Repeat Find" or "Repeat Change" to allow altering of some occurrences of a text string but not others. Since this feature is not particularly line dependent, it operates like any other Search and Replace feature. The program does not search backward, though, so it should always be started from the top of the text.

Some drawbacks of text input in the line edit mode can be avoided. An edited file can be created from the keyboard (a new file) or from an existing disk file. When a new file is created, the user may categorize it as a text file, a data file, or another type of file (such as a BASIC program). One way to avoid some of the drawbacks of text input in the line edit mode is to select the third option. This causes the program to jump into the Insert mode and activates the cursor control keys and program editing keys on the PC's keyboard. *Write-On* acts as a screen editor in this mode, but the automatic wraparound feature is disabled. This Screen Edit mode was intended to facilitate editing of BASIC, Pascal, or assembly language programs, but it may prove useful for text entry as well.

A file can be screen edited as a text file if the user types Ctrl-E as soon as the blank insert screen appears. A carriage return brings the cursor from the command area to the text entry area and activates the program edit keys. The user need only remember to press the Ins key to start the text entry and to press it again after pressing Del.

Printing

Several files can be printed in sequence at one time. Thus, a long file can be broken up into smaller files for editing and merged for printing. Multiple copies of the same file can also be requested by repeatedly specifying the file name. To save the time it takes the program to format each line as it prints multiple copies, the user can save a formatted file as a print image file on the disk after editing. Printing can be paused with the Break key,

which interrupts the BASIC program, and an be resumed by pressing F5.

Printer commands embedded in the edited text can control page length, margins, tabs, justification, paragraph indentation, line spacing, headings, and pagination. The default values for these format parameters are reasonable except for the margins: left (one character), right (79 characters), top (one line), and bottom (66 lines). People rarely want text that close to the edge of the paper. Consequently, those margins must be redefined at the top of every file.

The program's page numbering system is flexible enough to allow the user control of the form and location of the page number. An alternating page feature is included for printing even numbers on the left and odd numbers on the right. An interesting feature is the capacity for 20 centered heading lines. That's considerably more than many other programs, although the usefulness of more than one or two headings is not immediately apparent.

Other embedded print commands force the program to produce new paragraphs, new lines, or new pages and allow a line to be indented, centered, or right-set (right justified, left ragged).

File Management

Write-On's file management facilities are minimal. The user has a chance to view the directory of any of four disks when the program asks for a file name. The naming conventions are restricted to using an extension of ".T" for text files, ".D" for data files, and ".P" for print image files. This convention may be inconvenient for people who use the three-letter file type to keep their documents classified (for example, letter files that end in .LTR, or memo files ending in .MEM).

No automatic backup copies are created when a file is saved, and the user must exit the program to DOS to copy, rename, or delete files. The ability to create, edit, and merge data files into text is one of *Write-On*'s strongest features. It can be used to print form letters, mailing labels, checks, or almost any kind of form that doesn't require calculations. *Write-On* can use its own data files or those created by another program.

A conversion program is provided for data files from other programs. Data files are composed of records that can be up to nine fields long, each field holding up to 256 characters. The data files can be edited in a manner similar to *Write-On*'s text file editing. Up to 100 data files can be specified for a form letter at one time.

Once the data file is created and edited, commands are inserted in the text file to access the variables. When the program encounters a symbol (\Fn\), it searches the data file for the next entry in the nth field. One copy of the text file is printed for each record in the data file.

THE PROGRAM runs accurately the first time out.

Another strong feature is that variables can be typed in from the keyboard as the file is being printed. If a signal and the text of a prompt are embedded in the text at the appropriate places, the program will stop printing, flash the prompt on the screen, and insert the input from the keyboard into the proper place in the printed file.

Write-On has two unique formatting features. One is the temporary margin, which makes it easy to create outlines and enumerated lists, and the other is the ability to maintain three alternate margins within a single file. This feature is especially useful for scriptwriting; stage directions, character names, and dialog each use different margins, and the writer must constantly switch among them.

Learning and Using

Once a user gets past the confusion of the screen's being redrawn with no line numbers, the program is relatively simple to learn. A person new to word processing probably has some advantage over someone more experienced because the documentation is organized as a tutorial.

Although the tutorial documentation is not particularly well written or organized, it seems to be technically accurate. The manual, however, is visually annoying after awhile. Each page of four or five blocked, justified paragraphs of text looks exactly like every other page. There are no graphics other than a few examples of printed output. Topics are presented in one-page segments, but without subheadings or other visual clues. The single-page length is fortunate—the user won't have to reread more than a page or so to find the necessary instructions.

The documentation writers seem to have run out of tutorial steam when they reached the section on using data files; it needs more succinct instructions.

The program comes with some good sample files. Once the user figures out how to edit them, they can serve as useful models. They cover all the temporary margin, tabbing, and data file features.

Aesthetics

Write-On is quite a clunker. It does what it promises, but it never promises elegance. Line editing is never slick. The menus are simple but inconsistent: Some expect a numeric response while others require the initials of the menu choice. The user is required to do more work, particularly in text editing, than is desirable. One misses the feeling of support and consideration for the user found in other word processing programs.

On the other hand, *Write-On* has been around for a while (it was originally written for the Apple II), and most of the real bugs have already been found. The program runs accurately the first time out.

Applications

Write-On is a relatively low-cost option for people who use a word processor primarily for form letters. Such people could endure the inconveniences of line editing, gritting their teeth through the text entry phase for a single letter if they could sit back while the program printed out copies for 100 data files.

Scriptwriters would probably appreciate the multiple margin feature, but they would have to evaluate what effect line editing would have on their creativity.

It is difficult to imagine how a user with a large, diverse typing load could learn to love this program. Such a user might find a more expensive product the better buy, as it would make life easier. A program that costs two to four times as much as *Write-On* may not be so expensive if it saves time and work over several years. ***/PC***

Harry Miller is a technical writer and editor who lives in Danville, California. He specializes in microcomputer applications.

IDS MICROPRISM



$689.88

UPS Delivered

- 110 cps bi-directional, logic-seeking
- Single pass correspondance quality print
- 10, 12, & 16 cpi with extended mode (24 x 9 dpi)
- 84 x 84 dpi Dotplot graphics; 1/48" line space

Okidata Printers

MICROLINE 82A $439.00
ML82A TRACTOR $59.00
MICROLINE 83A $694.00
OKIGRAPH ROM..... $44.00
MICROLINE 84 Parallel
200 cps..... $1044.00
MICROLINE 84 RS-232C
200 cps..... $1169.00

Anadex Printers

DP-9500A $1474.00
DP-9510A $1474.00
DP-9620A $1569.00

Brother Printers

DAISYWRITER 2000 .... $1089.00
TRACTOR $49.00
CABLE $149.00

IDS Printers

PRISM 80 W/4-colors, Sprint Mode, Dot Plot, & Cut Sheet Guide..... $1329.00
PRISM 80 w/o color . $1174.00
PRISM 132 W/4-colors, Sprint Mode, Dot Plot, & Cut Sheet Guide..... $1699.00
PRISM 132 w/o color $1254.00

TEC Printers



DMP85..... $469.00
The generic version of NEC & Prowriter printers. Features 120 cps, bi-directional, logic-seeking, 1.3K buffer. 5 fonts, 8 sizes on 9x9 matrix, w/proportional print, true descenders, & Greek/Math font. 160 x 144 dots/inch Hi-Res graphics matrix, 1/144" line feed. Friction & tractor standard, rear paper path.

C. Itoh Printers

C. ITOH PROWRITER $499.00
CJTOH PROWRITER
Parallel & RS-232C $614.00
C. ITOH PROWRITER 2 ... $734.00
CJTOH PROWRITER 2
Parallel & RS-232C $794.00
C. ITOH F-10/40 STARWRITER
Parallel, 40 cps $1499.00
C. ITOH F-10/55 PRINTMASTER
Parallel, 55 cps $1799.00
F-10 TRACTOR $289.00

NEC Printers

NEC PC 8023A-C $509.00
NEC 3530 (35cps)..... $1809.00
NEC 7730 (55 cps) $2579.00

Centronics Printers

CENTRONICS 122-1 ..... $979.00
CENTRONICS 352 ..... $1614.00
CENTRONICS 353 ..... $2274.00
CENTRONICS 739-1 ..... $659.00

Smith-Corona

SMITH CORONA TP-1 ... $599.00
Specify 10 or 12 cpi
Specify Parallel or RS-232C

Call For Prices

On QUME & DIABLO Daisywheels. QUANTEX, DATASOUTH, DIP, MPI, & other printers available

Hayes Smartmodem



HAYES SMARTMODEM ... $229.00
HAYES 1200 BAUD
SMARTMODEM $574.00

MODEMS

SIGNALMAN MARK I $89.00
NOVATION AUTO CAT .. $224.00
NOVATION 1200 BAUD
AUTO CAT..... $569.00

USI PI Series



PI-3 (12" AMBER) $199.00
PI-4 (9" AMBER) $169.00
20 MHz bandwidth, 1000-line-at-center resolution, 80 columns by 24 lines—the USI PI-3 with amber screen redefines quality. Amber makes any display easier to read all day, every day. Used by **THE BOTTOM LINE**'s president, the USI PI-3 Amber Monitor comes with his personal recommendation.
USI PI-1 (9" Green) $164.00
USI PI-2 (12" Green) $174.00

Amdek Monitors

AMDEK 300G (12") $179.00
AMDEK Color I (12") $379.00
AMDEK Color II (12")
High Resolution RGB $799.00
AMDEK Color III (RGB) ... $499.00

Electrohome

1302-1 (12" RGB) $429.00
1302-2 (12" Hi res RGB). $799.00

IBM PC Upgrades

Quadram

QUADBOARDS
Memory in 64K blocks (up to 256K), a centronics-compatible parallel I/O with hardware to a external port, an asynchronous RS-232C communications port (DB-25 male external), and a clock/calendar with on-board battery—all of this on one QUADBOARD. Exceptional quality & design leaving remaining IBM P slots free for other applications

64K QUADBOARD ..... $439.
128K QUADBOARD ..... $539.
192K QUADBOARD ..... $629.
256K QUADBOARD ..... $719.
64K MEMORY CHIPS
(PKG. 9) ..... $99.

QuCeS Inc.

Big Blue for the IBM PC features a Z80 microprocessor running at 5.5 MHz, 64K memory, a centronics-compatible parallel port, the RS-232C port, an on-board calendar/clock, & a hard disk interface.
BIG BLUE ..... $519.

QuCeS Hard Disk subsystems f the IBM PC.
6mB HARD DISK ..... $2154.
12mB HARD DISK ..... $2479.
24mB HARD DISK ..... $3699.

Xedex

BABY BLUE ..... $539.

MicroSoft

64K RAMcard..... $274.
64K MEMORY CHIPS
(PKG. 9) ..... $99.

Maynard Electronics

FLOPPY DISK
CONTROLLER ..... $189.

Tandon Drives

40 TRACK, SS ..... $229.
40 TRACK, DS ..... $319.

IBM PC Software

We carry a full line of IBM PC Software. Ask about our Softwa Society discounts.

Orders & Information: CALL (603)-673-8857

Orders Only: CALL (800)-343-0726

No Hidden Charges

No surcharge for credit cards—No charge for UPS shipping—Stock shipments next day
All equipment shipped factory fresh with manufacturer's warranty—We accept CODs
Open PO's not accepted—$50 minimum order—No foreign orders accepted

Prices subject to change—call for quotes

VISA MasterCard

HIGH TECHNOLOGY AT AFFORDABLE PR

THE BOTTO LIN

Milford NH 03055-0

The PC Gets WordStar

Discover a powerful word processing program that features one of the fastest editors on record.



WordStar
MicroPro International Corp.
33 San Pablo Ave.
San Rafael, CA 94903
List Price: $495

Nine times out of ten, when people talk about word processing software, someone mentions MicroPro's *WordStar*. Not only is it the most widely known word processing program, it is also considered by many to be the best. Program writers dream of achieving such recognition and envy *WordStar*'s lofty reputation.

Program Requirements

Marketed at first for only the CP/M operating system, *WordStar* now provides versions for the Apple II and the IBM PC. *WordStar*'s PC version became available at just about the same time IBM was updating its operating system, PC-DOS 1.10. As PCers were rushing to implement DOS 1.10, MicroPro and many other manufacturers got caught with sophisticated programs that were compatible with only DOS 1.0. As a result, many PC users had a confusing time getting their *WordStar* packages up and running, especially since the first *WordStar* IBM documentation section made no reference to either DOS version and left much to be desired in its installation instructions.

MicroPro, however, has now updated *WordStar* to be compatible with both PC-DOS 1.0 and 1.10. PC-DOS 1.0 was compatible with only *WordStar* 3.02. When purchasing *WordStar*, be sure the new program and any options such as *MailMerge* and *SpellStar* are at least version 3.2. IBM PCs need a minimum of 64K RAM, but several functions of the program will run faster and require less available disk space if you install more memory. The manuals do not indicate how much more is needed for comfortable operation, but 128K will probably accommodate the longest document that you want to maintain as a single file.

WordStar requires two disk drives for most applications, but more may be advisable for word processing chores such as file merging or for copying files from separate subject disks to one common disk. Drive A must always hold the *WordStar* program disk, which contains all *WordStar* editing and printing programs plus *MailMerge*, *SpellStar*, and PC-DOS utilities. It's advisable to transfer any word processing commands that you may need (COPY, DIR, ERASE, COMP, TYPE, RENAME, and CHKDSK) from DOS to the *WordStar* program diskette.

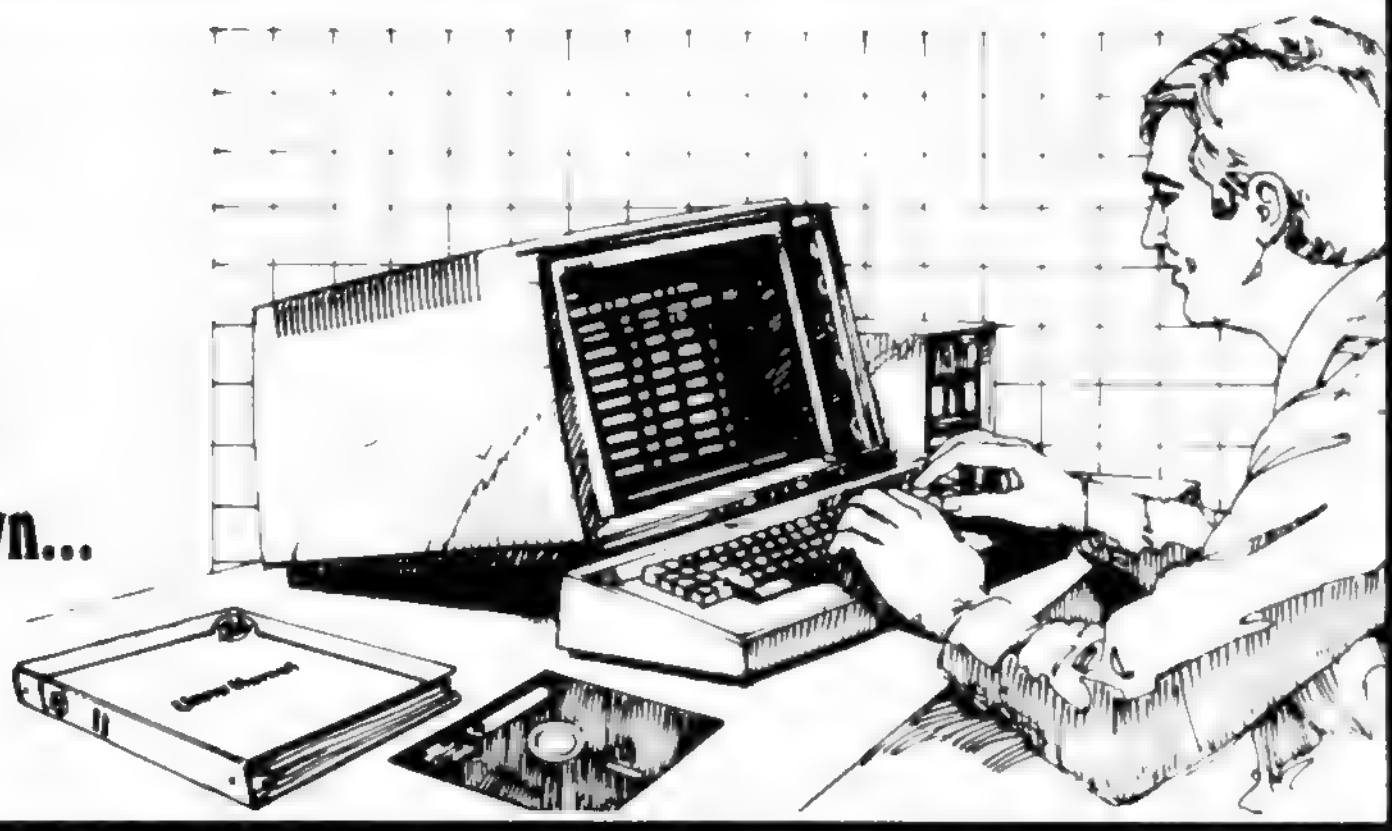
Drive B holds standard storage disks for straight text entry, editing, and printing. Thanks to DOS 1.10, *WordStar* works well with double-sided drives. It doesn't take long to discover that the 320K capacity of a double-sided storage disk offers a distinct advantage in using *WordStar*. It allows whole documents or a series of related documents to be stored on one disk. Beyond these special options, *WordStar* requires only an 80-column display and a printer.

Variety of Features

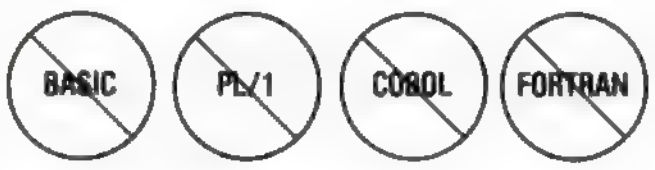
Text entry, editing, and printing benefit from what may be the largest number of commands available on a microcomputer word processing program. The *WordStar* quick-reference card lists 132 separate commands addressable from the keyboard. Most of these require two or three key sequences (for example, [Ctrl]-KS or [Ctrl]-Q for cursor control and text manipulation). For printing, 40 "dot" commands, which can be embedded within the text, are required. Users may add program supplements that increase *WordStar*'s flexibility. One of these is *MailMerge*, which is essentially an enhanced printing routine. It allows boiler-plate files (recurring slogans, addresses, or whole paragraphs) to be appended to or inserted in one or more documents. It also provides for automatic realignment of margins where variable length material is inserted. The other program supplement is *SpellStar*, an option that acts as a spelling checker and document word counter. Both options are produced by using one-key commands from *WordStar*'s opening menu.

Condor database obsoletes compilers!

Condor relational database management system makes your personal/business computer far simpler to use and much more useful to own... for less money... than other software.



Plain English, no computerese.
Condor relational database management is a complete development and operation system. It eliminates BASIC, PL/1, COBOL, FORTRAN, or other compilers in almost every case. It allows you to deal directly with your information without complex code words. In plain English, *it lets you manage your business instead of your data.*



Save 90%. Because no complex programming is needed, Condor saves *up to 90%* of the cost of program writing and testing! You also eliminate costly and time-consuming programmer "talent searches."

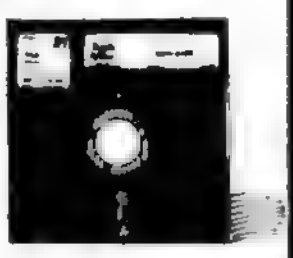
State-of-the-art relational format.
Condor makes traditional programming approaches using compilers *obsolete.* Features such as SORT, DEFINE, ENTER, POST AND REORG permit rapid database creation, access, control, monitoring and manipulation. For instance (by using the JOIN command), you can combine the information contained in two large file cabinets—such as "Purchases" and "Labor Cost"—into a single file—in one operation. To do the same task, ordinary software usually requires substantial reprogramming.

Easiest to learn and use.
Independent evaluators rate Condor *more "user-friendly" than any other personal / business computer database system.* After a brief study of the manual, you start building a database *within 15 or 20 minutes.*



In fact, *Condor has allowed many hundreds of first-time users to produce and process their own management reports.*

Only $295 for entry level.
Condor's multi-level modular design provides *full upward compatability,* up to *the most powerful software of its kind in the industry.* The entry level Condor I features database file development and management; entry, update, and posting; inquiry and report writing capabilities; and complete operations aids. And as information needs grow, you can easily upgrade to Condor III for writing highly complex reports and fast-query indexing.



Guaranteed to do more work, more easily for greater savings.
Put Condor to the test. Experience its power and versatility firsthand...how it puts you in direct touch with your data, while eliminating complex programming. You must agree that Condor saves you time, work *and* money...or return it within 30 days for a complete and prompt refund (at participating dealers only).

Questions? See Condor at your local software dealer, write to P.O. Box 8318, Ann Arbor, MI 48107, or call

(313) 769-3988.

condor
COMPUTER CORPORATION

P.O. Box 8318, Ann Arbor, MI 48107

The Industry Standard...Selected by Major Dealers, Distributors and Manufacturers.

Using and Learning

In many word processing programs the cost of multiple features is an unwieldy number of commands. This can become especially cumbersome if the commands require multiple keystrokes. To assist the newcomer, *WordStar* subdivides commands into logical groups, each with its own detailed menu. The No-File Menu appears first, along with a directory of disk files on Drive A. The No-File Menu lists one-key commands, used mostly for utility functions such as opening a file; changing the logged drive; setting help levels; and renaming, copying, or deleting files. Once you open a file, you can begin to use the editor.

In editing mode, the Main Menu lists commands for cursor movement, scrolling, deletion, and other miscellaneous operations. There is also a directory to five other menus: Help, Block, Quick, Print, and Onscreen. To call up these menus, you press [Ctrl] and the corresponding letter. The Help menu, [Ctrl]-[, lists ten brief explanations that assist in setting margins, moving text, and other procedures. The other menus feature 17 to 20 commands each in the following functions:

- BLOCK ([Ctrl]-K): saving text, executing block moves, and carrying out other file operations used in editing.
- PRINT ([Ctrl]-P): specifying special printer effects and commands.
- ONSCREEN ([Ctrl]-O): setting margins and tabs; centering lines; and turning justification, page break, word wrap, etc., on and off.
- QUICK ([Ctrl]-Q): positioning the cursor and deleting, finding, and replacing text within a file.

Where possible, mnemonics are employed. For example, [Ctrl]-O] turns on the right margin justification in the Onscreen Menu.

WordStar presents four choices for help screen and menu suppression, numbered 3 through 0. The more suppressed (or the lower the number), the more room there is on the screen for text. Even if you have full help (the default value each time you start *WordStar*), the program works ahead of screen changes so that you can execute a command on one of the supplementary menus without waiting for the menu to appear. In fact, supplementary menus won't appear at all if you know your commands well and enter them quickly. This speeds your return to text editing. There are still many commands, however, not explained on the screen. Read the documentation thoroughly and keep the reference card nearby.

Fortunately, *WordStar* for the PC makes use of the cursor control and function keys not found on most CP/M microcomputers. Cursor direction, scrolling, insertion/deletion, and tab commands listed in Table 1 operate naturally and are easy to learn. *WordStar* uses function keys F1–F10 to take the place of ten other commands as shown in Table 2.

The choice of commands is odd in some cases. As any *WordStar* user soon discovers, a few common commands would be more efficient as function keys than as Set Margins or Cursor Positions (F3, F4), and Mark Block Beginning/End (F7, F8). An experienced user would have

*Table 1: Numeric Keyboard Function Keys**

IBM Key Number	Key Label	WordStar Function	Equivalent WordStar Command(s)
4	←	Move cursor left	[Ctrl] S
8	→	Move cursor right	[Ctrl] D
6	↑	Move cursor up	[Ctrl] E
2	↓	Move cursor down	[Ctrl] X
7	Home	Move cursor to top left of screen	[Ctrl] QE, QS
9	Pg Up	Display previous screen (scroll down)	[Ctrl] R
3	Pg Dn	Display next screen (scroll up)	[Ctrl] C
1	End	Move cursor to bottom of screen	[Ctrl] QX
0	Ins	Insert	[Ctrl] V
	Del	Delete	[Del]

* Press the number lock key, [Num Lock], to activate. This key switches the functions on and off.

Epson Printing from WordStar

A program to enhance your WordStar *printouts.*

WordStar version 3.02 can be expanded to support all of the IBM PC (Epson MX-80) printer's style features. These features—compressed, emphasized, double-width, or double-strike print—can be installed in the user-defined patch area of *WordStar*. The program, as distributed by MicroPro, leaves four control codes available for such purposes. Figure 2 is a quick reference summary of the print enhancements.

The procedure described in Figure 3 changes some values in the assembly language patch area of *WordStar*. While you don't really have to know anything about hexadecimal notation or assembly language programming, you will have to be careful to make the changes exactly as you see them below. Steps 6 and 11 are inserted as safety precautions. Check the contents of these program locations carefully against the predicted results. Be sure to use a PC-DOS diskette and a diskette with a copy of the *WordStar* program (WS.COM) on it. Do not use the distribution diskette with the MicroPro logo on it.

If the results on the screen match those in step 11, the enhancements should work properly as soon as you test them. There are, however, a few characteristics of the program and the printer that must be honored if these features are to perform as expected. The control codes to turn the double-strike and emphasized features off must not be on the same line as the start code. The printer will look for the "off" code and ignore the start signal. In addition, the codes made up of three characters (Ctrl-PEE, Ctrl-PEF, Ctrl-PEG, Ctrl-PEH, Ctrl-PE8, Ctrl-PE9) must be typed as follows: hold the Ctrl key down and press P; release both keys; hold the shift key down and press the next two characters (EE, EG, EF, EG, EH, E8, or E9). The letters in the codes should be uppercase. If they appear in uppercase on the screen, you'll know they are correct. Figure 4 shows an example of the enhanced print features.

—Ralph Sampson

no need during editing for Set Help Level (F1). Some suggestions for function keys are: Save Text/Resume Edit (Ctrl-KS), move cursor to last position before Save (Ctrl-QP), Reform Text (Ctrl-B), and Save Text/Done (Ctrl-KD). Unfortunately, the Help Menus explain none of the function keys or cursor controls. Cursor movements are listed by their Ctrl-Character commands only.

MicroPro does not provide adequately revised documentation or tutorial material with *WordStar* version 3.2 for the IBM PC. Apparently, MicroPro wished to avoid the expense of editing the manual to reflect the PC's simplified keyboard command structure. Its compromise is a two-part introduction in which the first section provides space for the user to write in changes pertinent to the IBM PC.

The second section, entitled "Printer Installation," provides more valuable information than mere printer configurations. It gives step-by-step instructions for making a *WordStar* program disk from DOS and the master disk, as well as directions for formatting the disk. This is well written except for a curious description of the procedure for turning on the PC. The instructions tell you to switch on the PC and "immediately insert the IBM diskette labeled 'IBM DOS' into disk drive A." A note advises that if you wait too long, a beep will sound and you'll have to start over.

Follow IBM's directions instead. Place the disk in the drive, then power up. The introduction does not mention the AUTOEXEC.BAT facility on the PC operating system. The *WordStar* documentation instructs you to wait for the DOS A> prompt and enter WS [Return]. If AUTOEXEC.BAT is used, all date, time, and start-up procedures for *WordStar* could be held in its file and executed automatically when the system is booted. The IBM part of the documentation does not mention (and the main section of the manual mentions only briefly) the need for DOS-formatted storage disks. Since data cannot be saved unless the storage disks are DOS-formatted, this omission is a great oversight.

When it comes to getting to know *WordStar*'s operation, both novices and experienced users will find help in the separate *Training Guide* supplied with the program. This tutorial is a top-bound spiral workbook with a built-in cardboard easel. It introduces operating basics. Professionals buying *WordStar* for their own use may object to the secretarial tone of the *Training Guide*. It assumes that the pupil doesn't know a disk drive from a cursor and, unfortunately for the PCer who has the cursor pad, it wastes time on Ctrl-Character cursor movement. However, the guide can teach you enough in a couple of hours to help produce a letter or short report. Without it you would have to spend several days studying the rather dry, detailed manual to extract the essential instructions.

Editing

Text entry is straightforward. From the No-File Menu you specify whether you wish to open a document or nondocument file. The first gives you the power of *WordStar* page formatting and other options such as word wrap and justification. Th

Put a Little Color in Your *WordStar*

WordStar users can replace "half" and "bright" screen intensities with colors such as blue, yellow, cyan, brown, and magenta.

WordStar can be both colorful and efficient with the right equipment and modification of the program machine code. If your color monitor isn't delivering much color or if it won't accept intensity signals (resulting in display of only eight of 16 possible colors), the problem and solution could be in the *WordStar* patch areas.

With the release of *WordStar 3.2M* (the one that is compatible with PC-DOS 1.10), MicroPro has provided two user patch areas. (A user patch area is a portion of the machine code that can be modified by the user to customize his or her copy of the program.) Appendix C of the *WordStar* manual contains macro assembler code for patch area "User 1" and "User 4." User 1 is devoted to the areas that affect the display, while User 4 deals with the printer interface.

After close inspection of the well-documented patch areas, it became apparent that the user could change the display-attribute bytes that were sent to brighten and dim characters on the screen. As in BASIC, display attributes control whether characters are printed in reverse video, underlined, blinking, and—for the color graphics adapter—which colors are used. (In BASIC, the Color statement controls the attribute byte sent to the screen and is used before the Print statement.)

In the standard version of *WordStar*, as received from your dealer, display attributes are set to brighten menu titles and edited text, and dim marked blocks and menu information. If you are using a monochrome display or a color monitor that accepts an intensity signal, you will observe these variations in intensity. If not, the entire screen will appear in one shade without these helpful attributes.

When using an RGB color monitor with eight colors and no intensity variation, you may get around this limitation by changing either (or both) the bright or dim display attribute bytes to display color instead of intensity. Here's the procedure:

1. Place a DOS diskette containing DEBUG.COM in drive A:. If the computer is not yet on, turn it on; otherwise reset the system with the Ctrl-Alt-Del keys.

2. Place a copy of *WordStar* with the WS.COM program on it in drive B: (make sure that you're using a backup copy).

3. At the DOS command prompt A> type DEBUG B:WS.COM [Enter].

4. Select a color/intensity value from the Display Attribute Chart (Figure 1) that you want to assign to the areas that are normally dim during the *WordStar* program (text). If you wish to change color but maintain the low intensity, select a value from the left column. To leave the dim areas unchanged (white), skip to step 7.

5. The prompt for DEBUG is a dash. If no error messages are displayed and the DEBUG prompt is present, type E 0284 [Enter]. The screen will look like this (xxxx = any four digits):

```
-E 0284
xxxx:0284 07._
```

Continue

Before And After You Buy Your IBM Personal Computer



C Magazine is packed with formation for everyone interested in IBM Personal Computers. Each issue brings you ndreds of colorful pages th evaluations, insights, and raight talk from respected perts—professionals in computscience as well as business, education, w, and many other fields. PC covers soft are, hardware, applications, and every topic of importance to the thousands of IBM Personal Computer users. For a limited time only, you can subscribe to PC at NO RISK and still receive a 25% discount off the newsstand price. Enter your subscription today. If not satisfied when you receive your first copy, return your mailing label within 15 days for a full refund. Act now so you won't miss an exciting issue. Send $27 for 12 issues or your Visa or MasterCard number plus expiration date to: PC Magazine, 1528 Irving St., San Francisco, CA 94122.

Copyrighted material

THIS WORD PROCESSING CHART presents the features of 20 word processing programs. Most of the programs are available for the IBM PC, although several are scheduled for release (these programs are marked with an asterisk). The information presented here has been supplied by software publishers. We regret that we were unable to test every program.

PC Magazine Guide To Word Processing Programs

Software Manufacturers

Product	Manufacturer's Address	Phone
Benchmark 3.0	Metasoft Corporation 711 E. Cottonwood Ln., Ste. E Casa Grande, AZ 85222	(602) 836-0268
Easytext	Novell Data Systems Corp. 3400 Wilshire Blvd. P.O. Box 70127 Los Angeles, CA 90010	(213) 257-2026
FinalWord	Mark of the Unicorn P.O. Box 423 Arlington, MA 02174	(617) 489-1387
Forthwrite	Miller Microcomputer Services 61 Lake Shore Rd. Natick, MA 01760	(617) 653-6136
Master Word	Micro Masters Software Ltd. P.O. Box 513 Edmonton, Alberta T5J 2K1 Canada	(403) 922-3088
Perfect Writer	Perfect Software 1400 Shattuck Ave. Berkeley, CA 94709	(415) 644-3644
PowerText	Beaman Porter, Inc. Pleasant Ridge Rd. Harrison, NY 10528	(914) 967-3504
Select	Select Information Systems 919 Sir Francis Drake Blvd. Kentfield, CA 94904	(415) 459-4003
SuperWriter	Sorcim 405 Aldo Ave. Santa Clara, CA 95050	(408) 727-7634

Product	Manufacturer's Address	Phone
VersaText	TexaSoft 1028 N. Madison Ave. Dallas, TX 75208	(214) 941 (214) 495
Volkswriter	Lifetree Software, Inc. 177 Webster St. #342 Monterey, CA 93940	(408) 659
Wordflex	Nemco 9 Walnut St. Rutherford, NJ 07070	(201) 933
Wordnet86	Monoson MicroSystems, Inc. 51 Main St. Watertown, MA 02172	(617) 924
Word Perfect	Satellite Software International 288 West Center Orem, UT 84057	(801) 224
WordPlus	Professional Software, Inc. 51 Fremont St. Needham, MA 02194	(617) 444
WordStar	MicroPro International 33 San Pablo Ave. San Rafael, CA 94903	(415) 499
Wordvision	Bruce & James Program Publishers 6924 Riverside Dr. Columbus, OH 43017	(614) 889
Word Worker	Design Enterprises P.O. Box 14695 San Francisco, CA 94114	(415) 282
Write-On	Datamost 9748 Cozycroft Chatsworth, CA 91311	(213) 709

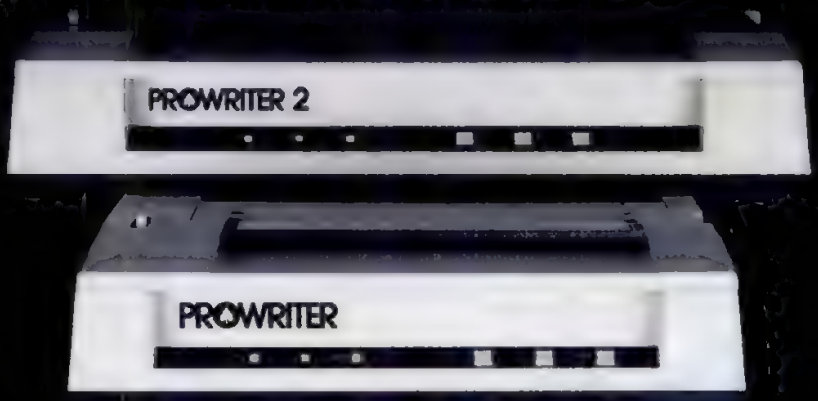
THE LEADING EDGE IN PRINTERS

ONE GREAT LINE. ONE GREAT WARRANTY.

Finally, there's one full family of printers that covers every business or word processing application—all from C. Itoh, a company known for packing more product into less price; and all distributed exclusively by Leading Edge, a company known for searching out and providing that very thing. Which means that one call to one source can get you any printer, any time you need it, for any purpose. All backed by a full years' warranty from Leading Edge. (Try *that* on any other line of printers.)

THE PRO'S.

Prowriters: business printers—and more. The "more" is a dot-matrix process with more dots. It gives you denser, correspondence quality copy (as opposed to business quality copy, which looks like a bad job of spray-painting).
Prowriter: 120 cps. 80 columns dot matrix compressable to 136. 10" carriage. Parallel or serial interface.
Prowriter 2: Same as Prowriter, except 15" carriage allows full 136 columns in normal print mode. Parallel or serial interface.



THE STAR.

The Starwriter F-10. In short (or more precisely, in a sleek 6" high, 30-pound unit), it gives you more of just about everything—except bulk and noise—than any other printer in its price range. It's a 40 cps letter-quality daisy-wheel with a bunch of built-in functions to simplify and speed up word processing. It plugs into almost any micro on the market, serial or parallel.



THE MASTER.

The Printmaster F-10. Does all the same good stuff as the Starwriter except, at 55 cps, the Master does it faster.



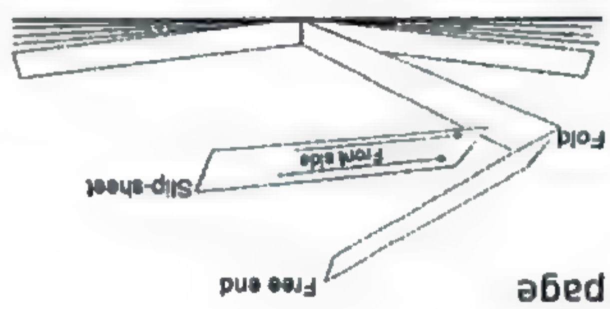
Distributed Exclusively by Leading Edge Products, Inc., 225 Turnpike Street, Canton, Massachusetts 02021. Call: toll-free 1-800-343-6833; or in Massachusetts call collect (617) 828-8150. Telex 951-624.

Copyrighted material

UTILITIES					PRINTING										SCREEN DISPLAY		PC KEYBOARD			ENHANCE-MENTS				PRICE
Copy File	Delete File	Merge Files	Disk Format	Disk Backup	Underline	Boldface	Subscript and Superscript	Proportional Spacing	Interrupt & Resume	Pause for Text Entry	Print Multiple Documents	Print Multiple Copies	Print One File While Editing Another		Menu Driven	Displays Text as It Will Appear in Print	Uses Cursor Pad Keys	Uses Function Keys	Uses Definable Function Keys	Table of Contents	Index	Spelling Check	Mail Merge	Price
●	●	●	3	●	●	●	●	●	●	●	●	●			●	●	●	●						$495
●	●	●			●	●	●		●	●	●	●				●	●	●	●	●	●		●	$149.95
●	●	●	●	●	●	●	●	●	●		●	●	●		●	●	●	●	●	●	●			$300
●	●	●	●	●	●	●	●	●		●	●	●			3		3		●					PC-DOS $175; MS-FORTH $249.95
3	3				●	●	3	3	3	3		●			●	●	●	●						$250 (Canadian)
●	●	●			●	●	●	●			●	●			●	●	●	●	●	●				$495
●	●	●	●	●	●	●	●	●	●	●					●	●	●			●				PC-DOS $399; UCSD p-System $19
●	●	●		●	●	●	●		●	●		●			●		●	●					●	$595
●	●	●			●	●	●	●		●	●	●	●		●		●	●		●		●	●	$395
	●	●			●	●			●		●	●			●	●	●	●					●	$149
●	●	●			●	●	●	●	●	●	●	●			●	●	●	●						$195
●		●				●						●				●	●	●						$140
3	●	●			●	●		●	●						●	●	●	●	●				●	n/a
●	●	●			●	●	●	●		●	●	●	●				●	●	●				●	$495; dictionary $150
●	●	●		●	●	●	●		●		●	●	●			●	●	●					●	$395 w/DOS
●	●	●			●	●	●	●		●			●		●	●	●	●	●					$495
2	●	2		3	●	●	●		●		●	●			●	●	●	●						$49.95
●	●	●			●	●	●	●	●	●	●	●			●	●			●					disk $29.95; book $24.95
●		●			●	●			●	●	●	●			●		●	●	●				●	$129.95

Inverted Foldout slip-sheet

1. Open the foldout page
2. Insert this sheet with
    1. Front side touching the free page
    2. Arrow pointing to the fold
3. Slice the folded edge
4. Close the page and slip-sheet

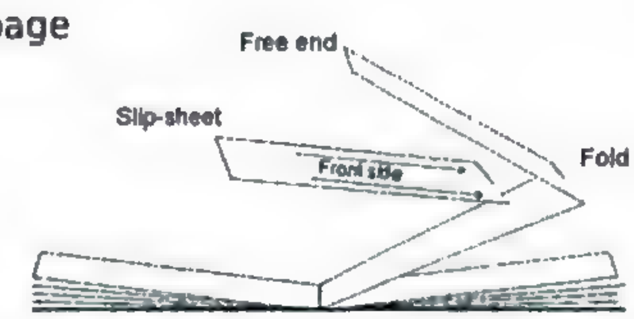


Folded edge of the page

GbsSlipSheet-001

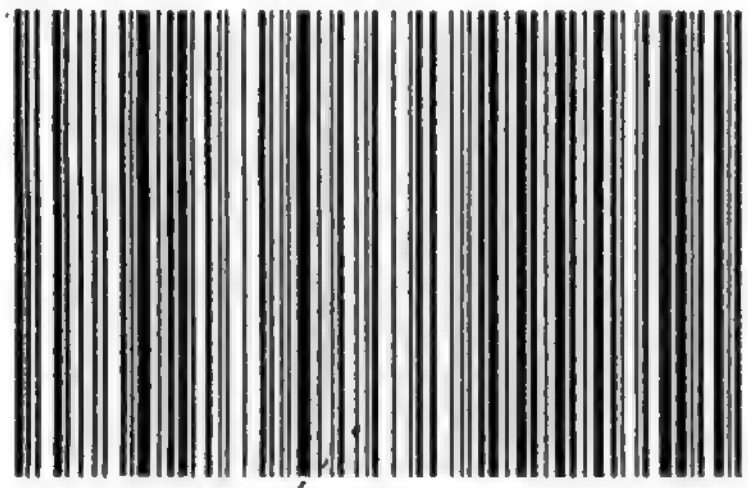
Foldout slip-sheet

1. Open the foldout page
2. Insert this sheet with
    1. Front side touching the free page
    2. Arrow pointing to the fold
3. Slice the folded edge
4. Close the page and slip-sheet



Inverted Back

1. Follow instructions on the other side



Back

1. Follow instructions on the other side

	DOCUMENTATION			TEXT CONTROL					PAGE CONTROL			CURSOR CONTROL					INSERT			DELETE				SEARCH									
	Reference Manual	Tutorial	Quick-Reference Card	Right Justify	Center Line	Move Blocks	Column Layout	Move Columns	Headers and Footers (At Least One Line)	Headers and Footers (Two or More Lines)	Automatic Page Numbering	By Character	By Word	By Page	To Beginning & End of Document	Horizontal Scroll	Typeover	Insert Character	Insert Lines	Character	Word	Line	Sentence	Find Word/Phrase	Find and Replace n Times	Find and Replace All Occurrences in Text	Ignore Case: Upper/Lower	Find and Replace Backwards in Document					Automatic Backup When File Saved
ENCHMARK 3.0	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							●
EXT	●	●	●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●		●			●				●
WORD	●	●	●	●	●	●			●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●		●				●
IWRITE	●	●		●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●						
ER WORD*	●	●		●	●	●	3	3	●		●	●	●	●	●	3	3	●	●	●		●	3	●	●	●	●						●
CT WRITER*	●	●	●	●	●	●			●	●	●	●	●	●	●		●	●	●	●	●	●	●	●		●	●						●
RTEXT	●	●		●	●	●	●	●	●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●					●
T*	●			●	●	●	●		●	●	●	●	●	●	●		●	●	●	●	●	●		●	●	●		●					●
WRITER*	●	●	●	●	●	●			●	●	●	●		●	●		●	●	●	●	●	●		●	●								●
TEXT	●	●	●	●	●		●	●	●		●	●		●			●	●	●	●	●	●		●	●			●					●
WRITER	●	●		●	●	●			●	●	●	●	●	●	●		●	●	●	●	●	●		●	●	●							●
FLEX*	●	●				●			●	●	●	●	●	●	●		●	●	●	●		●	●	●	●	●		3					
NET 86*	●	●	●	●	●	●	3	3	●	●	●	●	●	●	●	●	●	●	●	●	3	●	●	●	●	●	●						
PERFECT*	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●					
PLUS	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●		●	●	●					
STAR	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					●
VISION*	●	●		●	●	●	●		●	●	●	●	●	●	●			●	●	●	●	●		●		●	●						2
WORKER	1			●	●	●	●		●	●	●			●				●	●	●		●	●	●		●							
-ON	●	●	●	●	●	●	●		●	●	●	●	●	●	●		●	●	●	●	●	●		●		●							●

ook is available.
programs are currently being
ped to run on the IBM PC.

(2) Not applicable
(3) Information not available

REMEMBER:



"NEVER FORGETS."

MORE THAN JUST ANOTHER PRETTY FACE

Says who? Says ANSI.

Specifically, subcommittee X3B8 of the American National Standards Institute (ANSI) says so. The fact is all Elephant™ floppies meet or exceed the specs required to meet or exceed all their standards.

But just who is "subcommittee X3B8" to issue such pronouncements?

They're a group of people representing a large, well-balanced cross section of disciplines—from academia, government agencies, and the computer industry. People from places like IBM, Hewlett-Packard, 3M, Lawrence Livermore Labs, The U.S. Department of Defense, Honeywell and The Association of Computer Programmers and Analysts. In short, it's a bunch of high-caliber nitpickers whose mission, it seems, in order to make better disks for consumers, is also to make life miserable for everyone in the disk-making business.

How? By gathering together periodically (often, one suspects, under the full moon) to concoct more and more rules to increase the quality of flexible disks. Their most recent rule book runs over 20 single spaced pages—listing, and insisting upon—hundreds upon hundreds of standards a disk must meet in order to be blessed by ANSI. (And thereby be taken seriously by people who take disks seriously.)

In fact, if you'd like a copy of this formidable document, for free, just let us know and we'll send you one. Because once you know what it takes to make an Elephant for ANSI . . .

We think you'll want us to make some Elephants for you.

ELEPHANT.™ HEAVY DUTY DISKS.

For a free poster-size portrait of our powerful pachyderm, please write us.
Distributed Exclusively by Leading Edge Products, Inc., 225 Turnpike Street, Canton, Massachusetts 02021
Call: toll-free 1-800-343-6833; or in Massachusetts call collect (617) 828-8150. Telex 951-624.

nondocument file gives you compatibility with other programs. It works as a line-oriented editor to enter text for later retransmission through a non-*WordStar* format such as the DOS TYPE command and telecommunications.

In either case, the program prompts you to specify the file name. If the file name you specify is not in the directory, the screen tells you it's a new file, then delivers the editor and Main Menu. The editor assumes a number of default settings: word wrap, ruler line (at the top of the text area denoting margin and tab placements), right justification, page breaks, single spacing, 0 and 65 margins, and Insert On, to name several. If you don't want your material right-justified, you must turn off the justification, [Ctrl]-O], every time you power up *WordStar*.

WordStar provides one of the fastest, most pleasing editors available in a microcomputer word processing program. Inserting text is as fast and easy as entering regular text, except that you press the Ins key once to enter Insert Mode. A status line at the top of the screen plainly says INSERT ON when you're in this mode. Pressing [Ins] again turns off the function. Word-to-word cursor commands ([Ctrl]-F forward and [Ctrl]-A backward) and the PC keyboard cursor/scrolling controls make it easy to move around the screen.

Block movements are very professional. When you set beginning and ending markers anywhere in the text—phrase, sentence, paragraph, column—the block is highlighted in low-contrast characters. Text is in high contrast. Then you can copy, write to another (new) file, move within the same file, or delete. With 64K of memory, however, these functions are limited to blocks smaller than 900 characters, or about ¾ of an 8½- by 11-inch, double-spaced page. This is one good reason to acquire more RAM.

FREQUENT USE of WordStar keeps you conversant with its many commands.

WordStar makes maneuvering margins and tabs easier, either by specifying a direct location space number corresponding to the columns on the adjustable ruler line ([Ctrl]-OL [Return]) or by setting the cursor to the desired location on the screen and telling *WordStar* to set the margin there. Users who make charts will appreciate the decimal tab feature, which makes sure that columns of numbers (with or without decimal points) are properly aligned. Paragraphs can be quickly offset for emphasis by setting a temporary left-hand margin (F2). The line will word wrap and automatically indent the next lines until you press [Return], erasing the temporary margin.

After editing a document, [Ctrl]-B reforms (realigns) the text one paragraph at a time. A program default parameter called Hyphen-help will stop reforming if the program comes across what it thinks is a multisyllabic word at the end of a line. The

(continued from page 128)

If an error message is displayed, type Q [Enter] to return to the DOS command prompt. Check your work; repeat step 3.

6. Now type in the 2-digit value you selected from the Attribute Chart. Press [Enter].

7. Choose a value from the Attribute Chart to replace the high-intensity attribute in *WordStar* (marked blocks and menus). If you wish to change color but retain the same intensity, select a value from the right column of the attribute chart. If you don't want to change from high-intensity white, proceed to step 10.

8. At the DEBUG prompt "-" type E 028B [Enter]. The screen should look like this:

```
-E 028B
xxxx 028B 0F.
```

9. Enter the 2-digit value you have selected and press [Enter].

10. It would be a good idea to check your work now, before making the changes permanent. To do this, type D 0280 [Enter]. A large block of numbers will be displayed. The fifth set of digits from the left on the first line should contain the value that you entered in step 5 (or the original value 07 if no change was made). The twelfth value from the left on the first line should contain the value that you entered in step 9 (or a 0F if no change was made). If either of these values is incorrect, redo the appropriate step and check your work.

11. Write the changes to disk by typing W[Enter]. The program will respond with "Writing 5000 bytes."

12. Exit DEBUG by typing Q [Enter].

Now you're ready to use the modified version of *WordStar*. Remove DOS from drive A: and replace it with the modified *WordStar* disk from drive B:. Type WS [Enter] and you should be seeing new colors and/or shades in *WordStar*.

Some people prefer *WordStar* to appear differently even on the monochrome display. Instead of having normal text bright and marked blocks dim, you may utilize the procedure just mentioned to swap the values in the first and second addresses. This causes normal text to be bright and marked blocks to be dim. One possible drawback to this configuration would be that the menu titles and menu text also change to opposite brightness attributes.

Other effects may be obtained, such as inverse video and blinking. Consult the *IBM Technical Reference Manual*, page 2-50, for more specific information about the attribute bytes.

The *WordStar* manual (Appendix C, User 1, pages 5 and 6) contains detailed information about use of display attributes and their location in the *WordStar* program. You'll notice that the remarks in this section make use of the word "highlighting," which is somewhat misleading. "Highlighting" in their usage means "marking text." In the IBM version as supplied, "marked text" appears dim rather than bright. —*Bob Rice*

Figure 1. Display Attribute Chart

Hex Value	Color	Hex Value	Color
01	Blue	09	Light Blue
02	Green	0A	Light Green
03	Cyan	0B	Light Cyan
04	Red	0C	Light Red
05	Magenta	0D	Light Magenta
06	Brown	0E	Yellow
07	White	0F	High-Intensity White

the game control you've been waiting for

TRAK BALL

$64.95



TG Products, the oldest and largest manufacturer of accessories for personal computers, brings you fantastic control and versatility with the new TRAK BALL control. You will be amazed at how accurately, quickly and easily you can position screen objects in advanced arcade-level games.

TRAK BALL is designed for years of reliable, active play and is produced of the highest quality components. Models are available now for your Atari*, Apple II*, and IBM* personal computers. Ask for them at your dealer or order direct from TG Products, 1104 Summit Ave., Suite 110, Plano, Texas 75074. Telephone (214) 424-8568.

*Atari, Apple and IBM are registered trademarks of Atari Inc., Apple Computers, Inc. and International Business Machines Corporation, respectively.

TG PRODUCTS

Allow two weeks for shipment
All mail orders add $2.00 for postage and insurance.
Texas residents add 5% sales tax.

screen offers three choices: hyphenating the word at the position of the cursor (not always the correct spot in the word), moving the cursor to another spot for hyphenation, or choosing not to hyphenate. Turning Hyphen-help off helps reform faster and makes text easier to read. Reforming respects all spaces inserted during editing,

COMPUTER software should not dictate changes in the way the user works.

including two spaces after a period. Indented paragraphs need the temporary margin (F2) set before reforming. To reform the entire document (and avoid indented paragraphs), you instruct the editor to continue reforming the whole text. The Quick command, [Ctrl]-QQ-[Ctrl]-B, does the trick, though the *WordStar* manual fails to provide this tip.

Text appears on the screen as it will appear on paper. When you specify double-spacing, [Ctrl]-OS2, lines are double-spaced on screen and "LINE SPACING 2" appears on the top status line. Multiple line spacing slows editing, however, because moving the cursor from text line to text line sends it back to the beginning of the next line on the left margin, whether the line is full or empty. Entering and editing text in single space for later reforming in double space doesn't save time because the requisite extra lines are not automatically inserted between paragraphs.

Page breaks are indicated by a line of dashes and a "P" at the right of the screen. You can suppress this feature with command [Ctrl]-OP. The status line at the top of the screen identifies the document page number, line, and column on which the cursor is located at all times. When page breaks are turned off, the status line shows character, line, and column number. To get a character count of your text, press F9 ([Ctrl]-QR) and read the status line figure. Press another [Ctrl]-OP and you're back in page format again.

Embedded, or "dot," commands in *WordStar* allow you to specify one-line headers and footers, forced or conditional page breaks, top and bottom margins, special page numbering, special paper lengths, and several commands for daisy wheel-type printers. One command, .OP, turns off the default setting that automatically prints the page number at the bottom center of each page, starting with Page 1.

If you plan to edit diverse document styles such as charts, letters, and memos, *WordStar*'s inability to store formatting commands ([Ctrl]-O commands) with each document could cause lost time as you try to remember and reenter parameters for each document. Margins and tabs can be saved by creating a nonprinting ruler line. To do this, move the cursor to the left margin setting desired, turn insert on [Ctrl]-V, type two periods, press [Ctrl]-P, and then [Return]. What remains can at best be listed only in a nonprinting comment line (preceded by ..) for reentry at edit time.

The limitations of 64K memory capacity force the editor to dump blocks of text (usually around 1,000 characters) into temporary invisible files on the disk. A Save command reassembles and stores the pieces as text file. As the program makes these dumps, there is a large enough buffer to handle input at 90 wpm even though the status line urges the typist to WAIT. It's a pleasure to find a program that doesn't make the user wait during text entry to write to the disk.

Table 2 Function Keys

IBM Key	WordStar Function	Equivalent WordStar Command(s)
F1	Set help level	[Ctrl] JH
F2	Indent paragraph to tab	[Ctrl] OG
F3	Set left margin at cursor position	[Ctrl] OL ESC
F4	Set right margin at cursor position	[Ctrl] OR ESC
F5	Underline *	[Ctrl] PS
F6	Boldface *	[Ctrl] PB
F7	Mark beginning of block	[Ctrl] KB
F8	Mark end of block	[Ctrl] KK
F9	Move cursor to beginning of file	[Ctrl] QC
F10	Move cursor to end of file	[Ctrl] QR

* Put cursor at beginning and end of text you want underlined or boldfaced, and then hit appropriate function key.

Printing

Making *WordStar* print a file is simple. First, Save the file ([Ctrl]-KD), then press P on the No-File Menu. You're prompted for a file name. If it's the only file you've edited before printing, you can avoid typing the whole file name by pressing [Ctrl]-R for Restore Entry. Otherwise you need to type the file name and extension. Then press [Esc], and your entire file prints out in the default mode. Press [Return] and answer all the questions and prompts provided to reset any of the following parameters.

- Disk file output: to print out for a new file on disk rather than the printer.
- Start at page number: to start print midway within text.
- Stop after page number: for partial printing.
- Use form feeds: if your printer does not state them internally.
- Suppress page formatting: A "yes" suppresses page breaks, top/bottom margins, headers, footers, and page numbers.
- Pause for paper change between pages: an essential parameter for single-sheet feed; default is continuous form.

The *WordStar* documentation says in the beginning section that the IBM 80 cps printer and the NEC 3550 letter quality equivalent won't do fancy printing. Underlining, boldface (actually, double-strike instead of shadow), and overprint are about all they do. Daisy wheel printers, however, are supported with super/subscripts, microjustification, character width, and line-height commands. (These were not tested for this review.)

Version 3.2 of *WordStar* comes with a BASIC printer installation program to choose from the following printers: IBM

Parallel Printer, NEC 5510/5520 Spin-Writer, QUME Sprint 5, C. Itoh StarWriter, Diablo 1610/1620/630, Diablo 1640/1650/630, serial backspacing teletypelike printer, other serial teletypelike printers. The NEC 3550 Spinwriter responds with only the IBM Parallel Printer.

Figure 2. Summary of Epson print enhancements

CONTROL CODE ON	FEATURE	CONTROL CODE OFF
^PQ	Compressed print	^PR
^PW	Double width print	^PR
^PEE	Emphasized print	^PEF
^PEG	Double strike	^PEH
^PE8	Ignore Paper Out (used for single sheet feed—operational with IBM DOS V1.05 and later versions)	^PE9

File Management

Disk files and file management play an important role in *WordStar*. A knowledge of PC-DOS is very helpful for avoiding mistakes and optimizing disk utilization. There are a few limits and cautions to consider in naming files. If you specify the name of a new file with an improper character such as / or -, you are not told that you've made an error. When you try to save the text you've entered, a prompt informs you that the disk is too full (it is not), and you're dumped back to DOS with all your keyboard input lost. File names must also be unique because extensions are ignored when the program makes backup files. For example, if you have two files called COMPUTER.LTR (a letter) and COMPUTER.DOC (documentation accompanying the letter), the program will create only one backup file (extension .BAK), called COMPUTER, each time you edit them. And since there can't be two COMPUTER.BAK files, the most recently edited file overwrites the other.

Efficiency

The fast editing functions (in single-space text), combined with many useful word processing functions such as block moves and full screen editing, make *WordStar* an efficient package. As you become acquainted with the program, your editing speed increases. The program's efficiency increases dramatically with more than 64K of RAM. With more RAM the document could be held entirely in memory without saving sections of it in files as the buffer space is filled. Paging down through a document would not require waiting for the program to retrieve the next section of text from the disk. Unchangeable defaults are a nuisance if they don't fit your usual writing style. Seeking a document on a full directory could be a chore for the novice. Files are alphabetized on the directory to help you find them easily, but the profusion of regular and .BAK files can be overwhelming.

Figure 3: Installation of special print features

STEP	ACTION
1	Insert the IBM DOS diskette in Drive A
2	Insert the diskette with WordStar in Drive B
3	Turn power on
4	Enter today's date
5	Enter DEBUG B:WS.COM
6	Enter D 0757 076A The results should be: 049F:0757 00-00 00 00 00 00 00 00 00 ..... 049F:0760 00 00 00 00 00 00 00 00-00 00 ..... If the values at these locations are anything other than zeroes, do not proceed
7	Enter F 0757 L2 01 OF
8	Enter F 075C L2 01 OE
9	Enter F 0761 L2 01 1B
10	Enter F 0766 L3 02 12 14
11	Enter D 0757 076A The results should be: 049F:0757 01-0F 00 00 00 01 OE 00 00 ..... 049F:0760 00 01 1B 00 00 00 02 12-14 00 00 .....
12	Enter W
13	Enter Q
14	Remove IBM DOS diskette from Drive A
15	Remove WordStar diskette from Drive B and insert it in Drive A.
16	Enter WS
17	Try out the new print features

Outstanding Features

The editor, the heart of any word processing program, is the star of *WordStar*. Text entry, corrections, insertions, and deletions are all quick. You can perform practically every feature of the program while in the editing mode, including most of the No-File Menu commands such as printing, copying, and deleting a file. If your PC has more than 64K, you can edit while printing (not tested for this review), although the editor slows down somewhat.

WordStar document files are partially encoded with an eighth data bit assigned for word-wrapped lines and justification. However, the eighth bit can be cleared in a telecommunications program (such as *PC Talk*) for transmission through services such as The Source. Two directly communicating computers (via modem, for example) can send *WordStar* files to each other "as is" for further editing.

File sizes are limited only by the amount of free space on a formatted disk. You need enough space on the disk to ac

Imagine this . . .

You are working on a big document on your IBM PC. It runs at incredible speed . . . you have not had to change a diskette in ages or listen to the drives grinding . . . You press a single key and the whole next phrase types itself. Are you dreaming? NO—You are one of those wide awake people who have a

"TALL TREE SYSTEM"

How do you get a "Tall Tree System"?

You call Tall Tree Systems at (415) 941-5500 and order the

"Winter Writer's software special" ($125)

This diskette contains the **JFORMAT** programs plus **KEYNOTE;™** both PC DOS 1.10 enhancements.

JFORMAT system upgrades give you:

- access to extended **Electronic Disk** using any memory board
- a background **Print Spooler**
- **Ten sector diskette formatting** (for 25% more storage per diskette up to 811,008 bytes)
- capacity to read, write and format any PC diskette on **quad floppy drives** (TM100-4) with auto format sensing
- a handler for **8" floppy drive** controller boards for files up to 1,250,304 bytes long
- the handler source code for **Hard Disk Controllers** made by Corvus, DTC, Datamac, Davong, Tecmar, Santa Clara Systems, and others

The **KEYNOTE™** application program by Gerard J. Cerchio lets you **enhance** your typing by assigning **custom** strings of any length **to each of** the 96 "Extended Code" **keys on your** IBM PC. It works well **with all** IBM PC DOS 1.10 programs.

To take full advantage of our "Winter Writer's Special" you will want to run it on a Tall Tree Systems

512K JRAM Memory Expansion Board ($1200)

This is the **only** IBM PC compatible memory board that allows you to **break through** the IBM 640K memory barrier and as such, the **only useful** second memory board.

This software special will be offered until January 31, 1983 at $125.00. It is meant for end users only and there will be no dealer pricing, so call Tall Tree Systems today with your Visa, MasterCard or write us enclosing a check. CA residents add 6.5% sales tax. Shipping included.

Tall Tree Systems
1036 Los Altos Ave., Los Altos, CA 94022 (415) 941-5500

commodate the document, its backup copy, and any temporary files produced by *WordStar* while working on a 64K system. You'll never really "fill up" a disk, since you'll need blank editing space at least as long as your longest file. Unfortunately, you cannot change storage disks midstream to save an active text file on one disk and its backup file (.BAK) on another. You must constantly monitor disk size. On *WordStar* this is possible only if you run the DOS CHKDSK routine. There is a provision on the Main Menu for running a program without exiting *WordStar*, thus maintaining your session's parameters or changed default settings. CHKDSK is one DOS file worth having on your *WordStar* program disk. Disks fill up fast when you're not looking, but 320K double-sided disks offer great comfort to the prolific writer.

WORDSTAR *provides one of the fastest, most pleasing editors available in a microcomputer word processing program.*

Impediments

One of *WordStar*'s major annoyances is that it does not tell you if any of the default settings can be changed. Why should you have to reset logged disk drive to Drive B every time you invoke *WordStar*? And what if you practically never right-justify or print a page number on the first page of a document? You should be able to set these and other defaults at installation instead of having to set them at each session and for each document. A further annoyance is that you can't append files without the *MailMerge* option. You can append to some degree by copying text blocks from one file to another, but a basic word processing program ought to allow for easier implementation of some boilerplate files.

Another shortcoming for some users is that headers and footers are restricted to one line each; this doesn't meet with everyone's writing style. Computer software should not dictate changes in the way the user works.

WordStar reproduces the look of your pages while you're in the editor, but this feature is somewhat misleading. Headers and footers are displayed on the first page only. If you specify a top margin greater than the default setting of two lines, the status line counter simply subtracts the blank lines from the bottom of the page, instead of padding the display at the top of a page. What you see on the screen is not necessarily what is printed. Nor is there a provision for viewing the printed output on screen. Finally, the transition to the print mode could be a little faster if the program assumed that you were going to print the file you just edited. Why is there no prompt listing the file being worked on as a one-key option?

Aesthetics

Menu screens in the editor may be intimidating to the new user. They are not explicit directions so much as guides to jog the memory about what you read in the manuals. The menus would be more helpful and less foreboding if they showed the IBM PC keyboard controls.

Given all the information needed in a program of this magnitude, MicroPro did an adequate job of designating menu categories and using high- and low-contrast video characters. Document text is in the easily readable high contrast, while much of the menu, except subheadings, is in the nondistracting, low contrast.

Applications

Frequent use of *WordStar* keeps you conversant with its many commands. Double-density disk drives and 128K of RAM on the PC make *WordStar* more useful in long documents than most other microcomputer word processing programs. But you'll still want the *MailMerge* option in case you need to break a file into two parts and print it as one. The program handles short documents very well. Trying to find a file quickly on a directory when many files are listed can be frustrating unless you carefully choose file names and extensions. Copywriters who need to fit text to space based on type size and character count will like *WordStar*'s ability to format on screen, reset margins, and reform quickly to new specifications.

WordStar, which has been a very powerful and flexible word processing program for CP/M microcomputers and others, is a welcome addition to the IBM PC product line. Although some adaptations such as editing the manual to show IBM PC keyboard capabilities, are not complete, the total package has more features than generally needed. Since *WordStar* is fairly expensive, try to use it a few times before deciding to buy it. */PC*

Figure 4 Examples of Epson special print features

```
This is standard print

This line is boldface print

This line is emphasized print

This line is compressed print

This line is double width print

This is double strike print

This is emphasized and double strike.

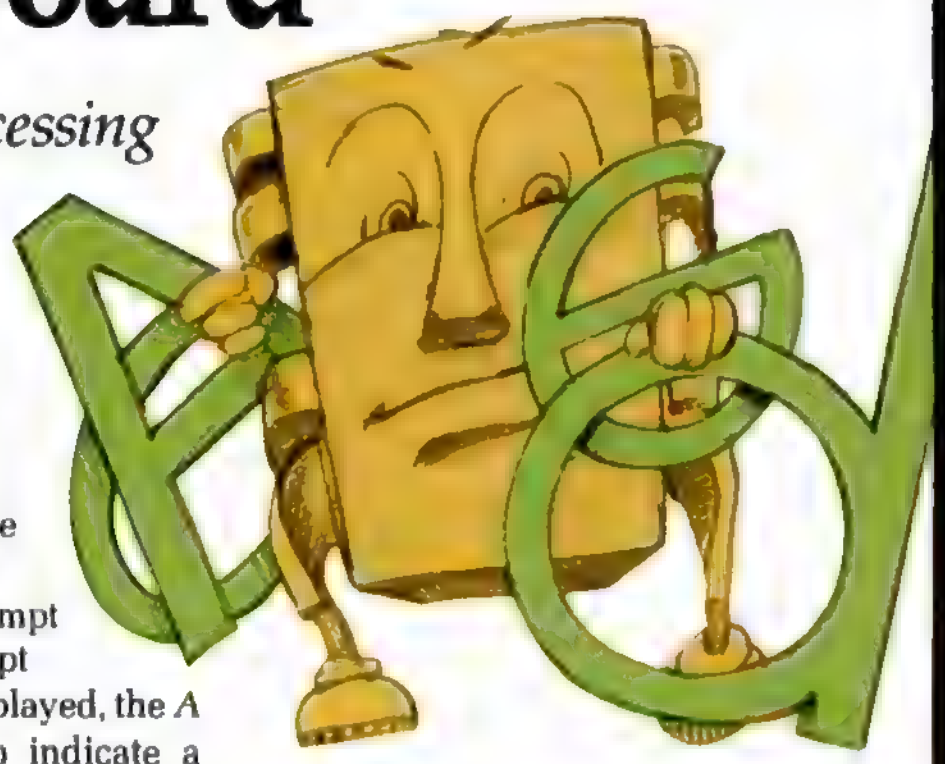
Double width and emphasized

Dbl width + emph + dbl strike
```


endly aliens? Forget it!
e stationed on an asteroid as a welcoming committee for a new race
ms. But you find out the hard way they believe the only good
nan is a dead one! You and your IBM-PC controlled lasers are the
lefense between them and the inner planets and Earth itself. The
g is fierce, the odds tremendous, but if you fight the alien battalions
nough and long enough you can at least delay their advance.
ace Strike has all the excitement, firepower and competitiveness
at made computer games such smash hits.
l help save the Earth while you enjoy the most absorbing
and fascinating game available for your IBM-PC.
SPACE STRIKE
Exclusive for the IBM-PC
Requires color graphics adapter
Only $29.95
at your computer store, or from:
DATAMOST (213) 709-1202
9748 Cozycroft Ave., Chatsworth, CA 91311
ESTERCHARGE accepted, $2.00 shipping handling charge
residents add 6% sales tax

Color Your Keyboard

A sneak preview of WordPlus-PC, *a word processing program that uses RGB on all the PC's function keys.*



WordPlus-PC
Professional Software Inc.
51 Fremont St.
Needham, MA 02194
List Price: $395

WordPlus-PC is being marketed by Professional Software Inc., a company that has sold more than 15,000 WordPro word processing packages on Commodore computers. Customer and dealer support facilities are already in place for this new IBM PC word processor.

WordPlus-PC is easy to use. A user can type a letter without setting values or entering format commands. The letter will then print out with default standard margins. For more complex documents, *WordPlus-PC* operates by means of embedded format commands, using a command line on the first line of the document. All margin settings, page centering, and line spacings are set on this line. Paragraph margins can be changed as needed by placing a new setting at the beginning and end of the paragraph, giving flexibility in document style.

Message Window

The bottom three lines of the *WordPlus-PC* screen display are called the message window. It functions as an interactive message area that displays what the program is doing, prompts, and requests for user input. When a function is accessed, a "prompt for information" appears in the message window. The first letter of each choice blinks to let the user know that it is waiting for one of the blinking characters to be pressed. Whenever the program requests information, the prompt is displayed with a question mark. Once the user answers the question, the question mark disappears and the function is performed.

The prompts and flashing characters tell the user at all times where he or she is in the program. The first character in a prompt is highlighted. If the prompt "Erase All Remainder" is displayed, the *A* and the *R* are blinking. To indicate a choice, the user would press the appropriate key (*A* for all or *R* for remainder). Prompts of this type, in conjunction with the Help function and the use of the PC's function keys, make the program almost self-explanatory.

Function Keys

The various features of *WordPlus-PC* are controlled by the PC's function keys.

NEW, COLOR-coded keycap labels are supplied for the Alt, Shift, and function keys.

These function keys, and the various word processing functions assigned to them, are accessed either directly or in tandem with the PC's Alt or Shift keys. A quick reference card is supplied with the package to explain how the various combination keystrokes work. New, color-coded keycap labels are supplied for the Alt, Shift, and function keys. All the single-keystroke functions are listed in blue on the function keys. To display a directory of text files, a user locates the function key with the word "Directory" and presses the key. When pressing the Alt key, which has a red label, the user performs any function listed in red on the function keys. Similarly, if the user presses the Shift key, which has a green label, the functions listed in green are performed. Since the function keys are color-coded, the user does not have to memorize various codes and keystroke sequences.

Print Features

WordPlus-PC displays both boldfacing and underlining on the screen when entered and printed. To begin underlining the user presses the color-coded Underline Start function key; all subsequent words are automatically underlined directly on the screen until the Underline End function key is pressed. Boldfacing is accessed in the same manner. To see the text as it will print out, the user presses the color-coded Video function key. The text is then displayed on the screen according to the format commands that have been entered. Video mode offers full horizontal scrolling for viewing spreadsheets and other wide documents.

Cut and Paste

The Block Move function is performed with the Cut and Paste key. The user defines the upper left-hand and bottom right-hand corner of the text to be transferred and moves the cursor to the block's destination. The program then asks whether to move "all lines or every other line." To manipulate columns when margin width is greater than 80, the user chooses the "every other line" option. Once the user presses *A* for all or *E* for every other line, the marked text is cut out and repositioned as indicated.

Introducing

GENIE® 5+5

5.25" Fixed/Removable GENIE Cartridge Drives

I.B.M. • APPLE II • RADIO SHACK

The Genie Cartridge Drive is a revolutionary new 10 Megabyte Hard Disk Drive that includes a 5 Megabyte removable cartridge. The cartridge Drive system simply plugs into your computer, and includes all necessary software and hardware. Genie drives are compatible with most popular software, and each cartridge replaces over 30 double-density floppy disks.



FEATURES

- 10 Megabytes of on-line storage.
- File sizes to 5 Megabytes.
- Power-on self-test.
- Easy back-ups in minutes.
- System expandable to eight drives.
- Built-in error detection and correction.
- No preventative maintenance required.
- Comes complete with all necessary software and hardware.
- MTBF 8000 Hours.
- Built-in fan.
- Operates 110/220 VAC 50-60 Hz.
- One year limited warranty.

Removable Cartridge. Imagine, 5 Megabytes in the palm of your hand. These small cartridges are only .75 inches thick and 5.50 inches square. The disk itself is completely sealed from the outside and all its hazards by a sliding door that opens only once the cartridge is firmly seated inside the drive. Long term availability of this cartridge is assured by its adoption by several well known manufacturers including **Dysan**, the world leader in computer mass storage media.

Only $3995.00*

Available at your local computer dealer

GENIE® COMPUTER CORPORATION

31127 Via Colinas #802
Westlake Village, CA 91362
(213) 991-6210

IBM Personal Computer is a registered trademark of IBM Corporation.
Apple is a registered trademark of Apple Computer, Inc.
Radio Shack is a registered trademark of Tandy Corporation.



Transfers any file back and forth!

Increase VisiCalc and Wordstar power by transferring files from the Apple II to the IBM Personal Computer—with no retyping and no errors!

CONNECT Apples to IBMs, Apples to Apples, or IBMs to IBMs. Transfer information from **any** file thousands of miles—in minutes.

UPGRADE your 64K Apple VisiCalc to 256K IBM VisiCalc power. Your worksheets can be larger.

INCREASE your Apple Wordstar 130K floppy capacity to IBM DOS Wordstar 320K floppy capacity. Over twice the space on disk.

CONTROL communication from either side in either direction with **Master/Slave** operation.

COMMUNICATE with people using the **Electronic Mail** mode. The Apple-IBM Connection can be used to send messages to Apples or IBMs.

Designed for the non-technical user, the Apple-IBM Connection comes with a disk for the Apple and a disk for the IBM. Connect the two computers with a cable or a telephone modem and insert the disks.



Turn on the computers and the software does all the work, asking you for the name of the file being transferred, the transfer speed, and the type of connection you are using.

Less than one minute after powering up, the transfer starts. The software checks to make sure that no errors occur during transmission.

Alpha Products for the IBM Personal Computer

All Alpha products come with **spoken instructions.** Alpha Software—professional, innovative, and easy to use.

Data Base Manager **Type Faces**
Question **Mailing List**

Call us for participating Computerlands and other dealers at (617) 229-2924.

REQUIREMENTS

Apple II—1 Disk, 64K Memory. D.C. Hayes Micromodem II or Mountain Hardware CPS Card.

IBM P.C.—1 Disk, 96K (Compiled Version) or 64K (BASIC Version). Any RS-232 Card.

AVAILABLE TODAY!

alpha SOFTWARE CORP

12 NEW ENGLAND EXECUTIVE PARK BURLINGTON, MASS. 01803

$195.0

Apple is a trademark of Apple Computer Company IBM is a trademark of International Business Machines Corp
VisiCalc is a trademark of VisiCorp. Wordstar is a trademark of MicroPro Corp.

Data Merge

With the Data Merge function the program reads records from an external data base, mailing list, or utility package and assigns the information contained in the record's fields into alphabetic variable names such as name or address. The user can then use these predefined names anywhere in text. For that particular letter, the variables read from the external record are assigned to the alphabetic variables in the text, and the letter or document is printed. With this type of data merge the user gets information directly from a data base or mailing list file without having to create a temporary work file. With the simultaneous I/O features of the program, the user can merge information from a mailing list and print out personalized letters containing variable information while simultaneously adding or creating a completely different document. If access to the disk is required to store or recall documents during simultaneous I/O, the data merging would temporarily pause while the user got the document from disk and then automatically continue.

Marketing Information

Professional Software is offering a 30-day money-back guarantee on the program. A user may purchase the program, try it for 30 days, and, if not fully satisfied, return it for a full refund. If the user already owns a word processing program for the IBM PC and likes *WordPlus-PC* better, he or she can sell his old program to Professional Software for up to $175. */PC*

SOFTWARE

Personal Writing With Wordvision

Exploiting the market for under $50.



Wordvision
Bruce & James
4500 Tuller Rd.
Dublin, OH 43017
(614) 766-0110
List Price: $49.95

A forthcoming choice for those who are interested in word processing is the "writing tool" program, the first offering of a new publishing company started by *PC* founding editor Jim Edlin. *Wordvision* requires an IBM PC with 64K, one disk drive (two are recommended), a monochrome or 80-column color monitor, and PC-DOS. Its first public demonstration is scheduled for the COMDEX trade show this December, and it should be on the market by January.

According to Edlin, *Wordvision* has been designed to exploit the capabilities of the IBM Personal Computer and to serve as a tool for personal writing. Edlin says earlier word processing programs were shaped by the constraints of less powerful computers and by the demands of secretarial and computer programming work, which he says have different needs from those of personal writing.



The best thing about being at the top is that I can spend all my time playing Executive Suite™ from Gray Flannel Fun.™

EXECUTIVE SUITE

Rise to the challenge of rising to the Executive Suite at Mighty Microcomputer Corporation.

It's a game of wits. And wit. You'll need plenty of horse sense, and a sense of humor, when Malcolm Farmsworth III (the President) storms into your office demanding to know why his pet project hasn't been completed on schedule. Or when Joyce Stern (the attractive VP of Administration) suggests a decidely non-business tryst after work!

But be warned, some of the answers that might seem most sensible turn out to have unfortunate consequences. Just like in real life.

Executive Suite is a Gray Flannel Fun game from Armonk Corporation. It runs on the IBM® Personal Computer.

To find out more, ask your local software dealer. Or call Armonk.

ARMONK CORPORATION

610 Newport Center Drive, Suite 955
Newport Beach, California 92660
(714) 760-3955

Gray Flannel Fun and Executive Suite are trademarks of Armonk Corporation. IBM is a registered trademark of International Business Machines Corporation

Wordvision will have the basic facilities expected of a program for word processing: control of content and control of appearance. In the area of content, *Wordvision* will allow deleting, copying, moving, and finding and replacing text. The program requires no separate insert facility because additions to text are automatically inserted wherever the cursor is moved. *Wordvision*'s cursor always points between characters in the displayed text rather than indicating a particular character (emphasizing the automatic nature of text insertion).

Other aids to content control are a phrase feature that allows reappearing phrases to be typed into text with two keystrokes and a special character feature that makes it possible to type nonstandard characters such as line-drawing graphics produced by a user's printer. A swap key allows correction of transposed letters with a single keystroke and another function key causes uppercase letters to become lowercase and vice versa.

Clean Copy

In control of appearance, *Wordvision* provides for user-settable tab stops that may be changed as needed. If a tab stop is moved, all text tabbed to that stop is adjusted accordingly. The program is also capable of multiple levels of indentation. *Wordvision* permits text to have either or both of two kinds of emphasis, which are initially set to underlining and bold printing, but which may be changed to any other emphasis, such as italic printing, for which the user's printer is capable.

There is complete control of page formatting, including top, bottom, left, and right margins; number of lines per page; characters per line; and single- or double-spacing. Paragraphs can be printed with a ragged right margin, a justified right margin, or in centered and flush-right formats.

A PHRASE feature allows reappearing phrases to be typed into text with two keystrokes.

Wordvision's page formatting is done with a graphic representation of the printed page on the screen, visually indicating the margin that is being adjusted. The formatting feature also includes automatic calculation so that text width, for example, could be specified as either 7½ inches or 75 characters, with the program figuring out the conversion. Automatic page headings, footings, and numbering are also provided.

Embellishing the Keys

Wordvision makes extensive use of the function keys on the PC keyboard, and the package includes a set of colored labels to be affixed to the keys to show their *Wordvision* functions. Most of the keys given named labels have a generic nature, such as "Disk" and "Print," that will also be applicable in other programs the company plans to publish. Edlin hopes these functions will be adopted as standard usage by other programs as well.

Functions more specific to the writing-tool program are accessed through the inner vertical row of the left-hand function key group, identified both by colors and symbols. Definitions for these "softkeys" appear across the bottom of the screen in a fashion similar to that used by IBM BASIC, but the colors, symbols, and position arrangement are intended to make their use easier.

Other keys that are given new meanings by *Wordvision* are the two at the upper right of the keyboard, labeled "word-/line" and "sentence/paragraph." The function of these keys is changed to follow whichever other function key was last used; if "Delete Character" was the last function key pressed, then pressing the "sentence" key would delete the entire sentence in which the cursor was located. An "undelete" key is also provided for use when more text is deleted than desired.

Wordvision works with text in the PC's memory only. A document's maximum size depends on how much memory a particular computer has installed, but *Wordvision* can use the entire amount of memory installed. The base version of *Wordvision* will print columns with a maximum width of 75 characters, which is

$1,000,000 IBM* PC?

YESTERDAY: A 500 nanosecs $1,000,000 IBM system 360/50 handled 50 users.
TODAY: A 200 nanosecs IBM PC handles only 1 user.
TOMORROW: A 200 nanosecs IBM PC can expand to 10 users!

For less than $1000,
the ALL CARD™ starts tapping this RAW PC POWER.

WATCH FOR THE NEXT ISSUE!

or contact:
ALL COMPUTERS®
a NET COMPUTERS INCORPORATED COMPANY
110 Bloor Street West Ste. 501, Toronto, Canada M5S 2W7 (416) 960-0111

*IBM is a registered trademark of International Business Machines Corp.

sufficient to fill standard 8½-inch paper with ½-inch margins on either side. Users who want to print wider columns will have to add a "powerpack" program that allows wider columns and lets text be scrolled across the screen horizontally as well as vertically. *Wordvision* is designed to be "growable" through the use of such powerpacks, which Bruce & James, Edlin's company, plans to offer in the future, providing features for needs not met by the main program.

The growable design is one element behind the firm's aggressively low price. Edlin says that *Wordvision*'s $49.95 price will make it easy for people to become acquainted with his company's products. Since the products are being designed with an uncompromising insistence that they be easy to learn and use, he hopes people will buy several other products in the company's forthcoming line. */PC*

SOFTWARE/LAWRENCE J. MAGID

Cast A Spell On Your Writing

*If spelling was never your strong point, a spelling program can save you time and embarrassment. Here are two—*SpellGuard *and* Proofreader*—with different strengths and weaknesses for different writers' needs.*



SpellGuard
Innovative Software Applications
The Plaza Building
1150 Chestnut Ln.
Menlo Park, CA 94025
List Price: $295 including manual

Proofreader
Aspen Software Co.
P.O. Box 339-P
Tijeras, NM 87059
List Price: $129; manual $8

The copy editors at PC cheered when they learned I was assigned to review spelling programs. Correcting my spelling was never their idea of a good time.

I looked at *SpellGuard* and *Proofreader*. Both programs work with any DOS file. I tested them with *WordStar* and verified that they work with files created by *EasyWriter 1.1*, *Volkswriter*, and the DOS editor. Although there are important differences, both programs perform essentially the same function. They check the words in a file created by a word processor against their own dictionaries of correctly spelled words.

If the spelling program finds a word in your file that isn't in its dictionary, it flags the word as a possible misspelling, but the

GIVE YOURSELF A GREAT COMBINATION FOR CHRISTMAS

FSEDITOR

The full screen text editor for the serious programmer. FSEDITOR does everything an editor should and more. Copy, move, delete repeat and insert lines or blocks of data. Scroll up, down, left or right and change any line on the screen. And once you've changed them they're saved on disk so you never worry about losing your data. If you write programs, you need FSEDITOR.

XF-DUMP

The complete full screen disk utility for IBM® PC. Display, alter and print any sector or file including system and hidden files. Lets you change any record by simply keying over the displayed data in character or hex. Search for strings of characters or print a range of records, XF-DUMP does it all. Also, to make things easy, delete, rename and list directory functions are included so you don't have to leave the program.

DSS

Distributed Software Systems
P.O. Box 1301
Northbrook, IL 60062
(312) 634-1511

Please send me:
- ☐ FSEDITOR and XF-Dump $160.00
- ☐ FSEDITOR $125.00
- ☐ XF-DUMP $70.00
- ☐ Information on all your products.

check, money order, c.o.d. accepted
(Illinois residents add applicable sales tax)

Name_____

Address_____

City_____

State _____ Zip_____

word is not necessarily misspelled. *SpellGuard*'s dictionary, for example, includes "institution," but "institutionalized" is flagged as a mismatch. "Idol" is in the dictionary, but "idols" is not. When the program finds an unfamiliar word, it gives you the option of correcting the word, ignoring it, or adding the word to the program dictionary. On subsequent runs the program treats added words like all other words in its dictionary, no longer flagging them as possible errors.

Computerized spelling checker programs are not a substitute for human proofreaders. Programs can isolate unfamiliar words, but they cannot check for meaning, clarity, accuracy, relevance, punctuation, or other elements of writing. I once made the mistake of mailing a letter after running it through a spelling checker, later to find that it was missing an entire sentence.

SpellGuard

SpellGuard comes with a 20,000-word lexicon that can be expanded or supplemented by the user. The program is fast, easy to use, and elegantly designed. Innovative Software Applications (ISA) created *SpellGuard* and was its distributor until recently, when the program was acquired by Sorcim, the publisher of *SuperCalc*. I tested the ISA version of *SpellGuard*, but I have been assured by Sorcim that there will be no significant changes in the near future.

After *SpellGuard* reads your document and flags words that are not in its dictionary, it asks you to determine whether those words should be marked for correction, ignored, or added to *SpellGuard*'s dictionary. If you mark the word, *SpellGuard* replaces its last character with the bracket symbol ([) or whatever symbol you specify. You then return to your word processing program, use the search function to find all occurrences of that symbol, and correct the word that precedes it. *SpellGuard* doesn't provide you with dictionary help, so if you're not sure how to correct your errors, you'll have to look them up the old-fashioned way.

You can start *SpellGuard* in two ways. You can proof a file in "batch" mode by typing SP FILENAME (include the drive name if the file is not on the diskette in the active drive). In the batch mode, *SpellGuard* checks your entire file at one time, following its own commands. Or you can start the program interactively by typing SP, and then follow the prompts.

As it proofs, *SpellGuard* reports the total number of words and unique words in the document. The number of unique words is an indication of how often you repeat the same words. Figure 1 is an example of the screen as *SpellGuard* reads a document. Typical of many documents, only 34.8 percent of the words in our sample file are unique.

When the % Proofing Done column reaches 100 percent, *SpellGuard* tells you "Proof Reading Done" and instructs you to press any key to enter word review. When the word review menu appears (see Figure 2), you determine what to do with the mismatched words. The words are shown one at a time at the bottom of the screen. The menu items can be selected by a number or letter. The letter generally corresponds to the first letter of the desired action. Typical of the program's emphasis on convenience, pressing Enter is unnecessary when making a selection. Help statements are displayed by typing a question mark.

Advanced Features

Even if you never use *SpellGuard*'s advanced features, it's nice to know that you can create your own dictionary or merge two dictionaries into one. It's also possible to get a listing of all or part of the dictionary, to alter the default tables, and to switch from "beginner" to "expert" user.

The default tables determine such things as the dictionary used, the character used to mark misspelled words, or whether to preserve your original text in a file ending in .BAK. You can change the default settings to suit your writing style. If you use the [symbol frequently in your text, it would be wise to change the symbol used to mark mismatched words to a rarely used symbol such as the backslash.

Speed

Using a double-sided DOS 1.10 diskette, the program took 29 seconds to proof the 2,100-character sample letter included on the *SpellGuard* diskette. It took 35 seconds to read a 28,500-character file (about the size of this article), and 47 seconds with a 60,000-character (8,255-word) file. These measurements cover the time the program spent reading the file and checking each word against *SpellGuard*'s dictionary. They don't count the time I spent deciding what to do about each word or going back into the word processing program to correct errors. Those times depend entirely on the person and the word processing

Word Review Options

"Add correct word" (1 or A) adds the word to *SpellGuard*'s dictionary. Often the mismatch is a name or a correctly spelled word that is not in *SpellGuard*'s dictionary. The program wouldn't recognize computer terms, for example.

"Mark" (2 or M) places the [symbol at the end of the word. Use it if the word is spelled incorrectly.

"Ignore Word" (3 or I) causes the word to be neither marked nor added to the dictionary. Use this when *SpellGuard* finds seldom-used names or technical terms.

"Return to previous word" (4 or R) brings the program back to the word prior to the one you are checking. If you select the wrong action for a word, you can go back and correct your mistake.

"Help" (5 or ?) displays a summary of each menu option. This feature virtually eliminates having to refer to the manual.

"Exit" (6 or X) takes you to a special review menu. This advanced feature allows you to add all remaining words to the dictionary, mark all remaining words in the text file, ignore all the remaining words, or list the remaining words. This is also the area in which you can create a custom dictionary.

Figure 1: Sample SpellGuard Screen

# Words Read	# Words Unique	% Words Unique	# Words Mismatch	% Words Mismatch	% Proofing Done
1,250	436	34.8%	21	4.8%	100.0%

program.

SpellGuard's 112-page manual is well written, but the program is so easy to use you'll be tempted not to read the documentation. It's a good reference, however, and is essential if you want to use some of the program's advanced features.

Proofreader

Proofreader's exceptional features help make up for its slow speed, clumsiness, and poor documentation. Despite these complaints, it is a worthy and powerful program. *Proofreader* allows you to correct words in context, display alternative spellings, and look up words in its dictionary. It uses a *Random House Dictionary* of either 32,000 or 50,000 words rather than a lexicon put together by a software firm. The larger dictionary requires dual-sided disk drives.

Proofreader's documentation and screen prompts are somewhat unattractive. The program has an awkward feel compared to *SpellGuard*. Even the name of the file used to start the program is unnecessarily difficult to type. To execute *Proofreader* you type PROOFRDR FILENAME instead of something simple such as SP, SPELL, or PROOF.

Proofreader allows you to add words to its dictionary through an auxiliary dictionary called AUXDICT.TXT. At the end of the program you are required to type in the name of that file. If you don't remember it, you have to refer to the manual. It would have been nice if the AUXDICT.TXT function had been made a menu option or at least assigned an easier name.

On a couple of occasions the program locked up my keyboard so that my only option was to reboot the system. This hasn't happened often, and I have been unable to replicate it, so I can't report when or why it happens. I may have been doing something wrong, but the program should be able to trap potential errors rather than force a system boot. Although annoying, all you lose is the time you spent working with *Proofreader*. Your document files remain on the diskette.

While typographical errors in manuals don't usually bother me too much, the nature of this product makes them stand out. The typographical error on page 4 of the *Proofreader* manual emphasizes an important limitation of this and all spelling programs: "Depending on you system configuration. . . ." Spelling checkers are not substitutes for human proofreading.

How It Works

Unlike *SpellGuard*, *Proofreader* doesn't just mark your text; it allows you to correct it interactively without necessarily having to reenter your word processing system. *Proofreader* uses batch files to drive the programs that do the work. A batch file is a group of programs chained together and executed as one program. Type PROOFRDR B:FILENAME (assuming your file is on the diskette in drive B) to initiate the program. PROOFRDR.BAT is a batch file that runs a program called PROFRDR.EXE. I don't like typing commands that are long or difficult to remember, so I renamed the file PROOF.BAT and it works fine.

Once initiated, *Proofreader* begins by reading your text file and remembering all the unique words in it. According to the manual, it has the capacity to handle a source document with over 3,000 unique words or a total of over 15,000 characters. If it finds more, it asks you to split the file. But as the manual points out, and my experience confirms, most documents have far fewer that 3,000 unique words. I tested the program on a 64K system, and it successfully checked a 60,000-character file with 1,200 unique words.

After the file is read, *Proofreader* displays "Sorting" while it sorts the words. It then tells you the number of different words found. Unlike *SpellGuard*, which displays total words and total unique words, *Proofreader* displays only the unique words.

Once your file is sorted, *Proofreader* checks the file against its master dictionary. When it's finished checking the master dictionary, it looks for an auxiliary dictionary called AUXDICT.TXT. If it doesn't find AUXDICT.TXT, it asks you to enter the names of any auxiliary dictionaries.

SPELLGUARD *is so easy to use you'll be tempted not to read the documentation.*

After all checking is complete, *Proofreader* displays the following menu.

Select Any Option:

C—Correct file SPELLER with Proof-EDIT.
D—Display unknown words on screen.
E—Exit from Proofreader.
G—Grammatik: check file with GMK.
P—Print unknown words on printer.
R—Review and edit unknown words.
S—Save unknown words in file: SPELLER.BWD

I usually start with "display unknown words on screen" (*D*) just to see what damage I've done to the English language. Assuming I will find some errors, I proceed to *C*, "Correct file SPELLER with Proof-EDIT." The "Review and edit unknown words" option *R* saves you time later when you go to correct the file, but I'm not convinced it's a net gain. You can also "Save unknown words in a file" *S* and correct them later.

Unlike *SpellGuard* this phase of *Proofreader* makes no marks on your text. All the incorrect words are written to a file ending with the suffix .BWD and beginning with the prefix of the file you are checking.

Figure 2. SpellGuard Word Review Menu

```
Press    In Order To
1 or A   ADD correct word to dictionary
2 or M   MARK incorrect word with symbol ``[`` in text file
3 or I   IGNORE word (Will not add to dictionary or mark)
4 or R   RETURN to previous word for re-reviewing
5 or ?   HELP-show instructions on what to do next
6 or X   EXIT Regular Word Review and enter SPECIAL REVIEW

Recap for Prior Word          Current Word for Reviewing
Word <Action Chosen>          Number  Word      -(your response)
                              DAER
```

Pressing C automatically takes you out of the Proofreading program and into the Proof-EDIT program. There you are given three ways to correct your file. Below is the initial correction menu screen.

C—Interactively correct unknown words.
M—Mark unknown words in file with #.
W—WordStar mode: Correct + mark if change width.
Enter C, M, or W:_

The interactive mode (C) is usually the one to use. Marking the errors (M) places the # symbol at the end of each error, requiring that you enter your word processing program to make the correction. That slows you down and defeats one of *Proofreader*'s best features. The *WordStar* mode (W) is more trouble than it's worth. Its purpose is to let you know if a correction has caused a line length change. This feature is important if you right-justify your files, but using it requires you to reenter *WordStar*, search for the + symbol, and reformat each paragraph that has been changed. I find it easier just to reformat the entire document using *WordStar*'s automatic reformatting routine (^Q^Q^B).

Interactive Correction

When you enter interactive correction mode, Proof-EDIT scrolls your document on the screen. When it finds a possible misspelling, it pauses and asks you what to do. Your options are displayed on a menu. The program also displays the line containing your misspelling to let you see how the word is used. A question mark appears below the possible misspelling as in the example shown here:

The program checks your file for any speeling errors.
  ?
******* unknown word: speeling
Word correction mode—Options
A—Accept word for rest of session, don't learn
C—Correct word, prompt will follow
D—Dictionary help. Find a word in dictionary
E—Exit—accept word and discontinue checking
L—Learn word for auxiliary dictionary
O—One time acceptance of word
A, C, D, E, L, O, (H for Help)?

"Accept word" (*A*) directs the program to accept the word for the rest of the session. This command is identical to the Ignore command in *SpellGuard*. "Correct word" (*C*) is used to replace the bad word with the correct one. Once C is selected, Proof-EDIT prompts you to: "Enter exact replacement." If the corrected word is in *Proofreader*'s dictionary, the scanning continues until another error is found. If the word is not in the dictionary, *Proofreader* tells you so. For example, if I correct "speeling" with "splling," *Proofreader* checks its dictionary for "splling," and when it doesn't find it, displays the following menu.

*** Replacement not in dictionary!
*** Unknown word is now: splling
Options now:
A—accept that spelling and continue
C—correct word again
D—Dictionary help

"Dictionary help" is another feature that sets *Proofreader* apart from its competition. If you request dictionary help, *Proofreader* displays three rows of words that approximate the spelling of the word you are checking. If your spelling errors are like most, this list probably includes the right word. If *Proofreader* flagged "speeling" as a mismatch and you entered *D* for dictionary help, *Proofreader* would ask you to: "Press Return only to look up

QUALITY COMPUTER FORMS
AT PRICES YOU CAN AFFORD

WE SUPPORT MORE
IBM PC SOFTWARE
PACKAGES THAN ANYONE!

INVOICES • STATEMENTS • CHECKS • P.O.'S • SHIPPERS • MEDICAL FORMS • INCOME TAX FORMS • W2'S • LETTERHEAD

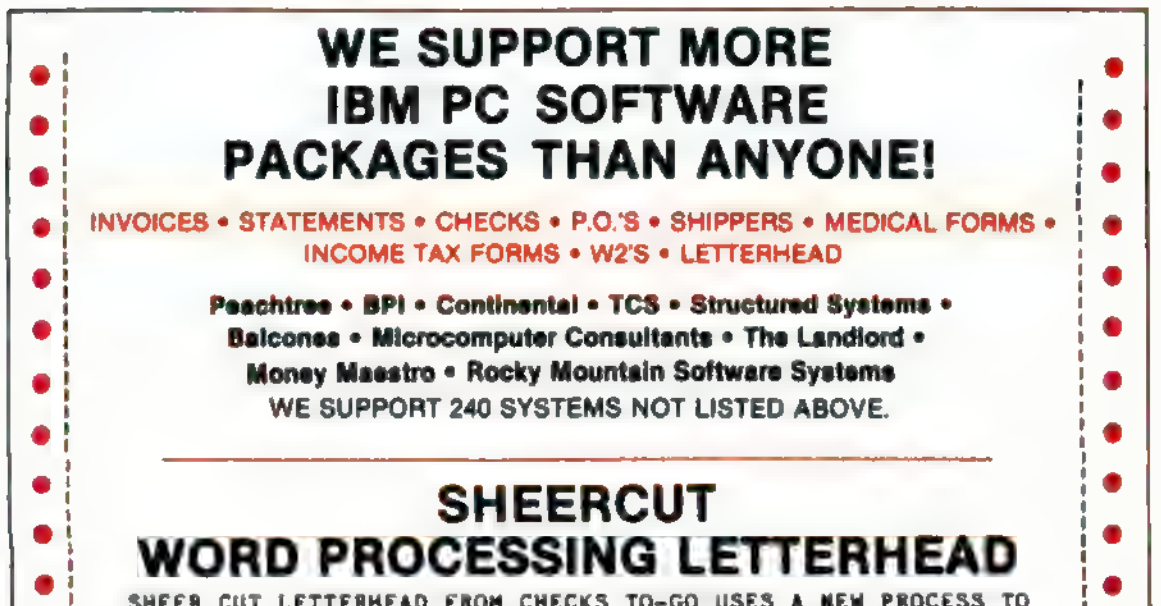
Peachtree • BPI • Continental • TCS • Structured Systems • Balcones • Microcomputer Consultants • The Landlord • Money Maestro • Rocky Mountain Software Systems
WE SUPPORT 240 SYSTEMS NOT LISTED ABOVE.

SHEERCUT
WORD PROCESSING LETTERHEAD

SHEER CUT LETTERHEAD FROM CHECKS TO-GO USES A NEW PROCESS TO PRODUCE CONTINUOUS FORM PAPER THAT TRIMS CLEAN WHEN BURST. NORMAL COMPUTER PAPER USES FIVE PERFORATIONS PER INCH, BUT SHEER CUT USES A NEW TECHNOLOGY TO PRODUCE 80 PERFS OR "TIES" PER INCH. THIS PRODUCES A VERY CLEAN AND UNIFORM EDGE WHEN BURST, AND IS ECONOMICAL IN BOTH SMALL AND LARGE QUANTITIES. SHEER CUT IS AVAILABLE ON A STOCK FORM BASIS IN FOUR "CLASSIC LAID" PAPERS, OR IN ANY TYPE PAPER ON A CUSTOM ORDER. EVERY OTHER FORM CAN BE IMPRINTED TO PRODUCE CONTINUOUS FIRST AND SECOND SHEETS. BLANK PRICES ARE $60 FOR 1,000, $235 FOR 5,000 AND $400 FOR 10,000, WITH IMPRINTING, DEALER, AND VOLUME PRICING AVAILABLE.

CONTINUOUS AND SNAP-OUT
TAX FORMS

Call for your free 1982 continuous tax form catalogue.



IN CALIFORNIA 800-552-8817
8384 Hercules Street La Mesa, CA. 92041
NATIONWIDE 800-854-2750

CALL TOLL FREE NOW: (800) 854-2750 IN CA (800) 552-8817
Your assurance of Value and Service.

See Us At COMDEX Nov. 29-Dec. 2, 1982 Las Vegas Convention Center Las Vegas Nevada

speeling." It would then display the following list:

Looking for: speeling

speeded	speeder	speeders
speedier	speediest	speedily
speeding	speeds	speedy
spell	spelled	spelling
spells	spend	spender
spenders	spending	spends
spendthrift	spent	sphere

Choose among the words. If one of them is the spelling you are looking for, enter *C* (for correct) at the next prompt and *Proofreader* will accept the correct word and proceed to the next error.

You don't have to have an error to look up a word. You can type in a word to check if it is in the dictionary.

"Learn" *(L)* is similar to the "Add word" function in *SpellGuard*. "Learn" writes words you want to add to the dictionary into the auxiliary file usually called AUXDICT.TXT. As long as AUXDICT.TXT has less than 100 words, the process is quick and automatic. *Proofreader* comes with a dictionary edit program that is used to merge AUXDICT.TXT into the master dictionary. The process takes several minutes but is not used often.

Speed

Proofreader reads a 60,000-character file in about 80 seconds and checks its master dictionary in an additional 90 seconds. It can read shorter files more quickly (it took about 8 seconds to read the 2,100-character sample file that came with *SpellGuard*), but the time for checking the dictionary is unrelated to document size.

Although slower than *SpellGuard*, *Proofreader*'s features help make up for its sluggish performance when proofing and checking its dictionary. *Proofreader*'s interactive correction mode eliminates the time it takes to go back into your word processing program to find and correct errors. And *Proofreader*'s dictionary eliminates the need to look words up manually.

I wish it were possible to declare a winner in this spelling bee. Both programs have their outstanding features, and both have their limitations. *SpellGuard* does what it does faster, but *Proofreader* does more. Because of its dictionary help and interactive correction features, *Proofreader* is the more powerful product and the one I use most often with major articles and important letters. When I'm in a hurry and want to verify the accuracy of a letter, I use *SpellGuard*.

The choice depends upon the type of work you do and the type of errors you make. It's a little like choosing between shopping at a supermarket or a convenience store. If you're a good speller and make mostly typographical errors, *SpellGuard* is your quickest and most convenient way to check for accuracy. If you're a weak speller and frequently find yourself referring to a dictionary, *Proofreader* is your full-service program. */PC*

SOFTWARE/KAREN PHILLIPS

Easy Spelling For Poor Spellers

Check your spelling against an 88,000 word list and customized lexicons with EasySpeller.



EasySpeller
Information Unlimited Software, Inc.
2401 Marinship Way
Sausalito, CA 94965
(415) 331-6700
List Price: $175

EasySpeller is a spelling checker program that is helpful for anyone who composes on a PC while using a dictionary. It's a comprehensive error-detection program that is menu driven, has self-explanatory user prompts, and makes full use of the PC's function keys.

A word list, or lexicon, of 88,710 word roots and variations forms the base of *EasySpeller*. In addition to the standard lexicon, custom lexicons are built for specialized terms, trade names, product codes, names and addresses, or any other list that is often referenced. These custom lexicons, used with the standard *EasySpeller* lexicon, can be used concurrently or interchangeably, tailoring the program's capabilities to the user's special needs.

Requirements

This program requires a system with at least 64K of memory, two disk drives, and an 80-column display. The *EasySpeller* program diskette uses drive A while a working diskette with the text files uses drive B. It runs under PC-DOS, but since some of the DOS commands are used with *EasySpeller* for checking and maintenance of the data diskettes, the following commands should also be on the *EasySpeller* program diskette: CHKDSK, RENAME, COPY, DIR, ERASE, and TYPE. You can create and edit text files under a number of word processing programs including *EasyWriter 1.0*, *WordStar*, *Volkswriter*, and the DOS editor.

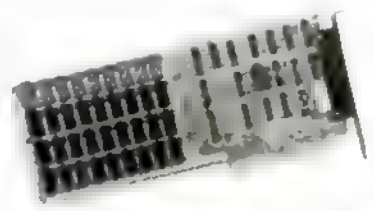
Ease of Use and Documentation

EasySpeller is one of a growing number of user-friendly software packages. The program's pleasantly arranged and informative menu screen, frequent prompts, and status statements during operation are helpful in guiding you through the checking steps.

Since the program provides numerous prompts, you might be tempted to avoid reading the documentation. However, reading the manual and performing the

PC 256K RAM
EXPANSION BOARD

$169.95*
(64K RAM INCLUDED)



- Proven design
- Fully tested and burned in

***with purchase of**

BetterBasic™
Makes Basic easier

and

SpeedBasic™
Makes Basic faster

BOTH for ONLY $69.95

$119.90 Software value —
(See our other ad this issue)

RAM BOARD:
- **Fully tested and burned-in**
- **12 month limited warranty**
  - **Parts and labor**
  - **Customer pays shipping**

Offer ends 12/31/82

YES SEND ME THE PC256K RAM EXPANSION BOARD

- ☐ 256K RAM INCLUDED @ $359.95*
- ☐ 192K RAM INCLUDED @ $299.95*
- ☐ 128K RAM INCLUDED @ $229.95*
- ☐ 64K RAM INCLUDED @ $169.95*

*PLUS: BetterBasic and SpeedBasic BOTH for only $69.95

Entelekon™
12118 Kimberly
Houston, TX 77024
713/468-4412

_____Mastercard _____Visa _____Exp. date

CARD NUMBER

NAME

ADDRESS

CITY STATE ZIP

SIGNATURE

tutorial exercises is well worth the time and effort. The documentation is professional, readable, and complete. Within a few hours you can perform the functions on your own text files. The documentation is divided into three sections: Introduction, Tutorial, and Details. The Introduction includes general information about *EasySpeller* and instructions on setting up the system. Included are detailed commands for copying the DOS system and commands to the program diskette, formatting a data diskette, and even writing on the diskette labels. The tutorial provides seven exercises to familiarize you with the programs. Step by step, features are added to material already covered, allowing you to master each function before a new one is introduced.

Unfortunately, the *EasySpeller* program diskette is copy protected, so a backup copy must be purchased for $15. If the program diskette is damaged at the time of purchase, a free replacement is available for 90 days. Phone Support, a customer service from Information Unlimited Software, makers of *EasySpeller*, is also available for an annual fee of $35.

Program Operation

Once the system is booted, the *EasySpeller* Selection Screen appears, as seen in Figure 1. Five options enable you to: make a spelling check from a DOS file, check the program diskette for damage, or exit *EasySpeller* to DOS to display or print a corrected file. To do a spelling check, the File Selection Screen lists all available files on drive B (see Figure 2). Enter the name of the file to be spell-checked from those listed. The program will then ask if any custom lexicons are to be consulted in addition to the standard lexicon. If only the standard lexicon is used, press Enter and the program checks the desired file. If custom lexicons are also consulted, enter the names of the lexicons, such as geology or business.

Figure 1: EasySpeller Selection Screen

```
C - >Spell-check a DOS file
V - >Verify the integrity of the
     EasySpeller
     Diskette
M - >Move DOS file into/out of EasyWriter
     (1.0) file
T - >Create a Tutorial Diskette
X - >Exit the EasySpeller System

Please type C, V, M, T, or X to select a
function: _____
```

The most heavily used option, C, allows you to do a spelling check from a DOS file, while V checks the program diskette for damage. To copy EasyWriter 1.0 files to DOS and vice versa, use option M; to copy practice exercises from the tutorial, use T. X is for exiting EasySpeller to DOS.

CORRECTING a word within the context of a sentence is a simple procedure.

You can create custom lexicons by entering data into them during the corrections work function. Five custom lexicons can be used concurrently, allowing specialized terms to be in separate files rather than in one auxiliary file. The separate lexicons can then be used as needed. After *EasySpeller* checks the words in question, errors can be corrected in context or a file can be created using the editing mark of two exclamation points before each questionable word. If errors are corrected in context, the program advances to the *EasySpeller* Work Screen (see Figure 3). With the file option, the program asks for the name of an output file and then returns to the Selection Screen.

Making Corrections

Correcting a word within the context of a sentence is a simple procedure. Since the cursor stops at the beginning of the word in question, you simply space over to the correction area of the word and make the correction, deleting the incorrect letter. Press Enter and the cursor returns to the beginning of the word. With the F3 key the corrected word is again compared against the lexicons and the F1 key tells the program to continue on to the next mismatch in the file.

Once a correction has been made, any similar errors encountered later receive an implied suggestion for correction below the highlighted word. To make the correction, press the F5 key. If the same

Figure 2: File Selection Screen

```
                    Available File on Drive B

DECL.TXT | GENES.TXT | LETTER.TXT  MEMO.TXT | WHALES.TXT

Enter filename to be spell-checked:

Enter filename to use as a custom lexicon (or ENTER key):
```

After selecting option C, the File Selection Screen will list all available files on drive B.

Figure 3: EasySpeller Work Screen

```
F1 ▶ Proceed forward                F2 ▶ Undo current attempt
F3 ▶ Verify from cursor             F4 ▶ Mark current position
F5 ▶ Apply suggested correction     F6 ▶ Add to custom lexicon
F7 ▶ Exit                           F8 ▶ Replace throughout file

There will be a meetting of the Christmas Party Planning Committee.

Stopped on document line 1
EasySpeller does not recognize this word at all.

                                        Custom Lexicons Used
                                        1 = names.lex
                                        2 = product.lex
                                        3 = codes.lex
```

The top half of the Work Screen shows how the PC's function keys are used in the program. In the middle of the screen the message window displays a line of text with the possibly misspelled word highlighted in green, and at the bottom it notes the mismatched word's location and explains why it stopped at that word. Also listed in the lower right-hand corner are the custom lexicons used during the spelling check.

orrection is desired throughout the file, ress F8 and then F1 to proceed forward in he file. Mistakes made in correcting a nismatched word can be undone, and vords can be marked with double excla- nation points for future editing. The pro- ram can be returned to the Selection screen at any time.

With custom lexicons, words and liter- ls can be easily added. If, for example, ou want to add "ultra-suede" to your cus- m lexicon, just add the word and press =) indicate it is a literal term; give the cus- m lexicon number (such as "3 product- lex") and go on. You can also update the ppropriate DOS file with recent correc- ions before exiting the program, and you an create a log file that will allow you to ee at a glance all the corrections made luring a spell-checking session. The log ile includes the name of the document, he line number of the questioned word, the original spelling of the word, and the corrected spelling. Once a document has been corrected, the original file is saved with .BAK and the corrected file becomes the new filename.TXT.

Final Thoughts

EasySpeller is a complete spelling checker that is as easy to learn as it is to use. The prompts and function keys make for quick corrections. The standard lexicon is large, with its word forms and roots, and since the custom lexicons are easily built, the numbers of words and literal expressions checked there are vast. A major drawback is that *EasySpeller* does not provide the user with a list of suggested spellings for the mismatched words it shows. Considering the valuable features of this program, users will be surprised that they still need to sit at the computer with dictionaries on their knees. */PC*

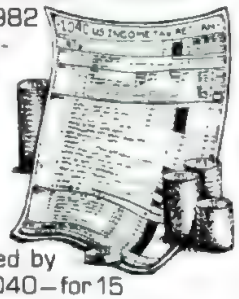
SOFTWARE 1040

proudly announces

PLAN 1040

The "What If" Income Tax Planner for Your IBM Personal Computer

Plan 1040 allows you to run an almost unlimited number of tax strategies through your personal computer and get the results in seconds. It covers tax years 1982 and 1983, including the 1982 Tax Equity and Fiscal Responsibility Act.



Produced by Software 1040—for 15 years a leader in quality income tax preparation software for professionals—the Plan 1040 package is immediately available for the IBM PC. (Required: Min. 64K, Diskette and PC DOS. Optional: IBM® printer or equivalent.)

Special Introductory Price—$150

Now personal computer owners can join other professionals around the country who, year after year, have saved the cost of Plan 1040 many times over. Act today!

☐ **Send me Plan 1040. My check for $150, payable to Software 1040, is enclosed.**

☐ **Send me Plan 1040 and charge $150 to my Visa _____ Exp. date _____ Master Card _____ Exp. date _____**

Acct. # _____

Signature _____

Name _____

Company _____

Street _____

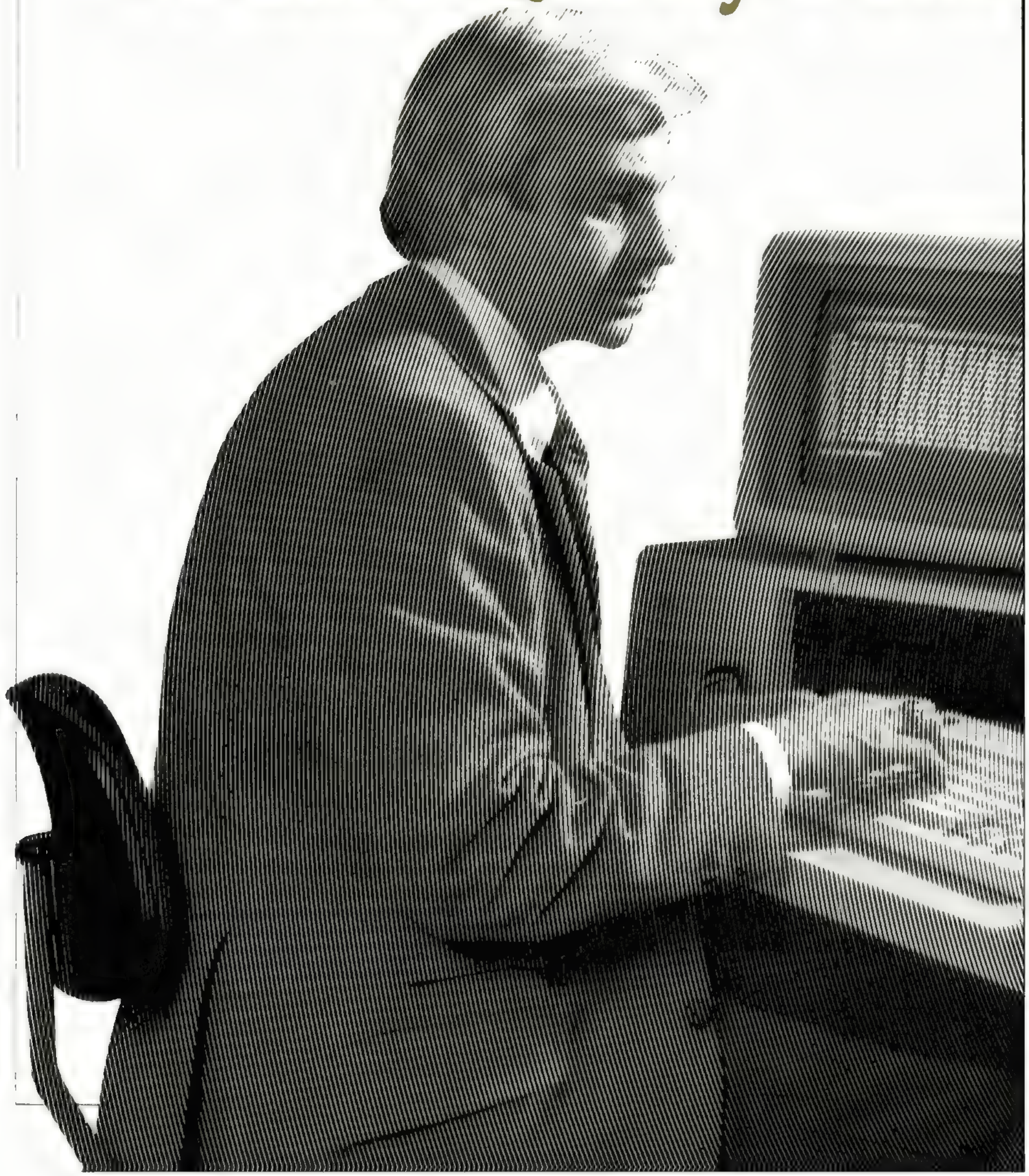
City _____ **State** _____ **Zip** _____

☐ **Please send me more information on Plan 1040.**

mail to: Software 1040, 10 Nevada Drive, Box 1010, New Hyde Park, N.Y. 11042.

HARDWARE/JEREMY JOAN HEWES

How To Choos A Letter Quality Printe



users are at no loss for ions when selecting a chine that builds racter on paper.

you think of electric typewriters, it's likely you think of IBM. And yet, . IBM announced the Personal Com-. this office-typewriter giant ignored bvious and put its label on an Epson atrix printer. Although many inde-ent suppliers leaped into the void to typewriters and letter quality print-LQPs) compatible with the PC, IBM waited a year to get around to offering an LQP as part of the PC's optional hardware.

That official printer is the NEC Spinwriter Model 3550, though it wears IBM clothing. The same printer, with its NEC label, has been available at a limited number of outlets (including some Sears Business Centers and ComputerLand stores) for several months. Whichever label this printer wears, it was designed especially for use with the PC.

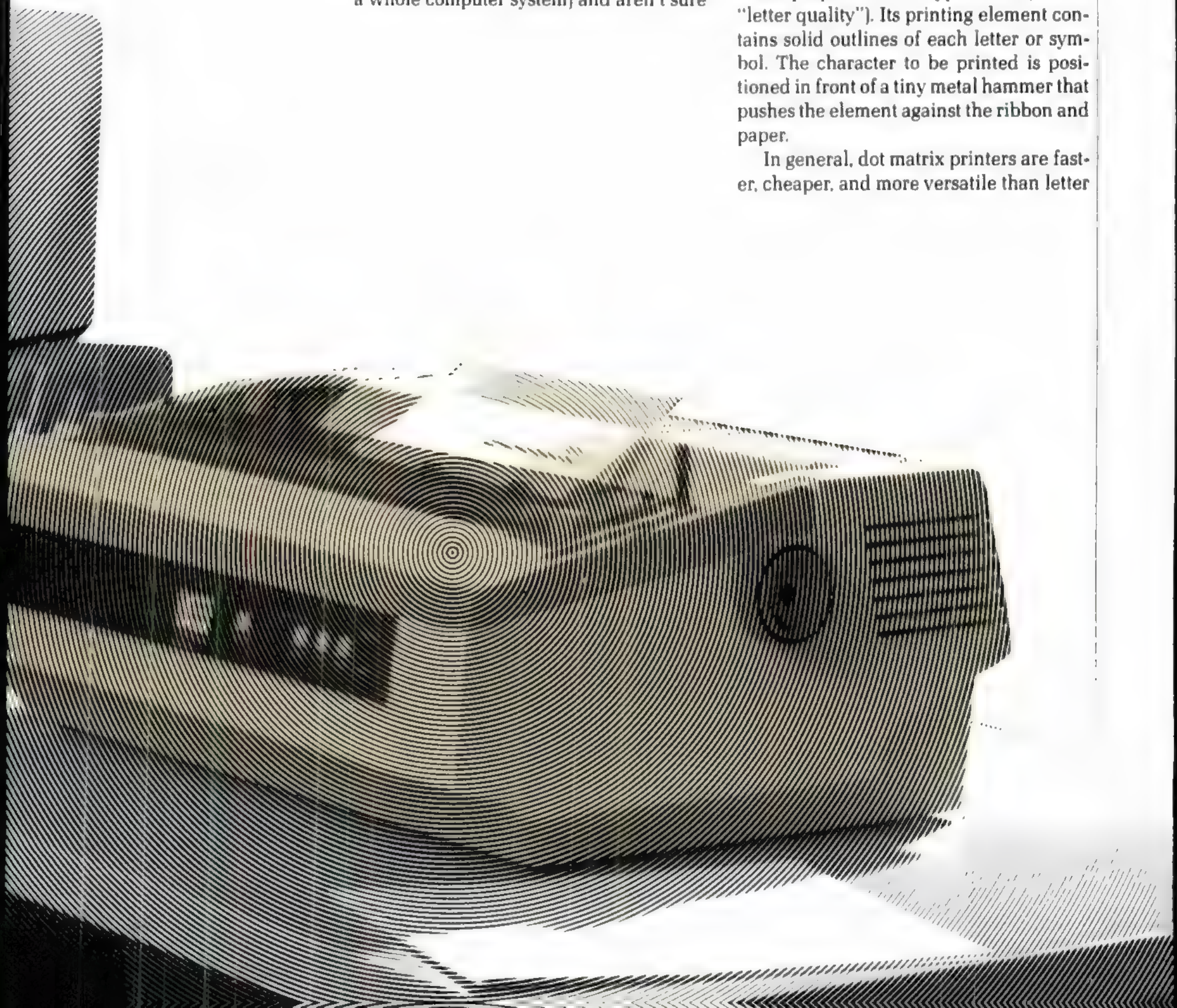
Because that PC-specific LQP arrived almost a year after the first PCs, however, a great many users couldn't and didn't wait for this specially designed printer. These people have been utilizing a selection of other LQPs, with varying degrees of compatibility and with varying results.

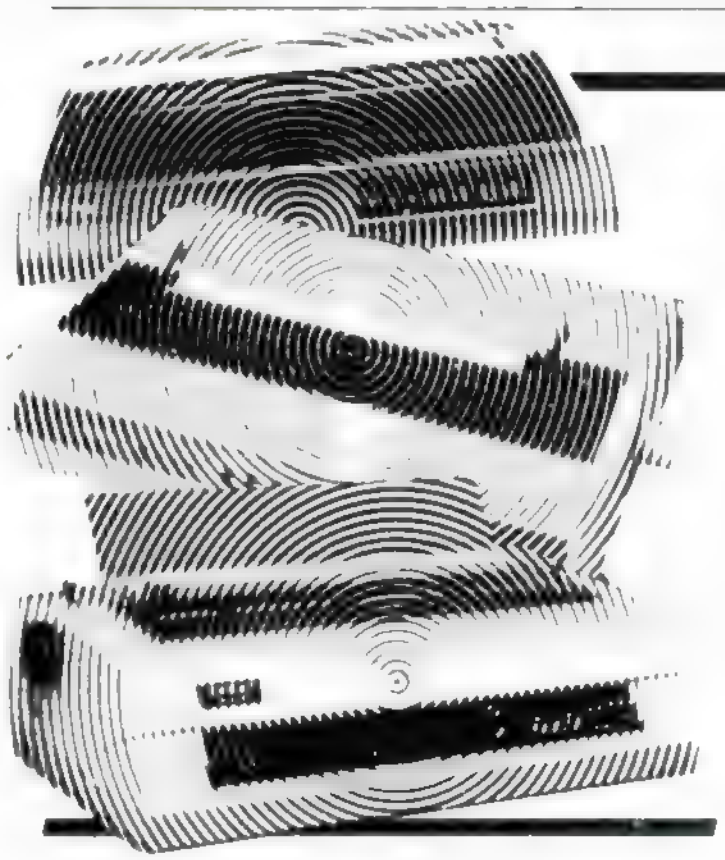
If you are in the market for a printer (or a whole computer system) and aren't sure what type of printer to buy, the discussion that follows is for you. If you know that you want an LQP or are trying to make the one you already have work properly with a PC, the User Guide to Printers in this issue should help.

LQP Advantages

The generic names of the two common types of computer printers accurately describe their output. A dot matrix printer deposits a series of closely spaced dots in the pattern of the desired letter, number, or symbol. It uses a print head made up of tiny wires that can be activated independently to push the ribbon against the paper according to an electronic instruction for each character. An LQP produces fully formed characters like those in a business letter prepared on a typewriter (hence, "letter quality"). Its printing element contains solid outlines of each letter or symbol. The character to be printed is positioned in front of a tiny metal hammer that pushes the element against the ribbon and paper.

In general, dot matrix printers are faster, cheaper, and more versatile than letter





ANYONE WHO writes letters, prepares contracts, or produces reports will find the LQP an indispensable part of a word processing system.

quality printers in the size and variety of characters and shapes they can print. But they cannot print solid, fully formed characters, and the pattern of dots they form is always confined to a matrix of horizontal and vertical lines (quite similar to that of a video screen or monitor). Although dot matrix printing is relatively easy to read, it is not as professional looking as letter quality printing and it has traditionally been associated with the common prejudices against computers.

To avoid the negative biases some people still harbor about the Computer Age, as well as to produce office-typewriter-quality pages, many microcomputer users have opted for the slower, more expensive LQPs. The LQP has replaced the typewriter in thousands of offices; anyone who writes letters, prepares contracts, or produces reports as part of doing business will find the LQP an indispensable part of a word processing system. Most writers who have converted to computers for their work also use LQPs because editors and publishers are accustomed to reading typewritten manuscripts.

A Wide-Open Field

During the 10 months before an LQP made specially for the computer was available, PC users were at no loss for options in choosing an LQP. The cost of LQPs has been decreasing steadily, and the number of models and manufacturers has been growing just as rapidly. A year or two ago a buyer could spend $2,000 to $4,000 for an LQP or $500 to $800 for the electronics to convert certain typewriters into low-speed computer printers. Today, the distinctions between printer and typewriter have blurred, the costs have come down, and the speeds have improved.

Given these changes in little more than 2 years, the future is bound to present more choices and features in LQPs. Regardless of these improvements, however, the basic operation of an LQP is likely to remain substantially the same—an embossed plastic or metal printing element striking ribbon to leave its impression as a solid line of ink on paper.

Three Types of LQPs

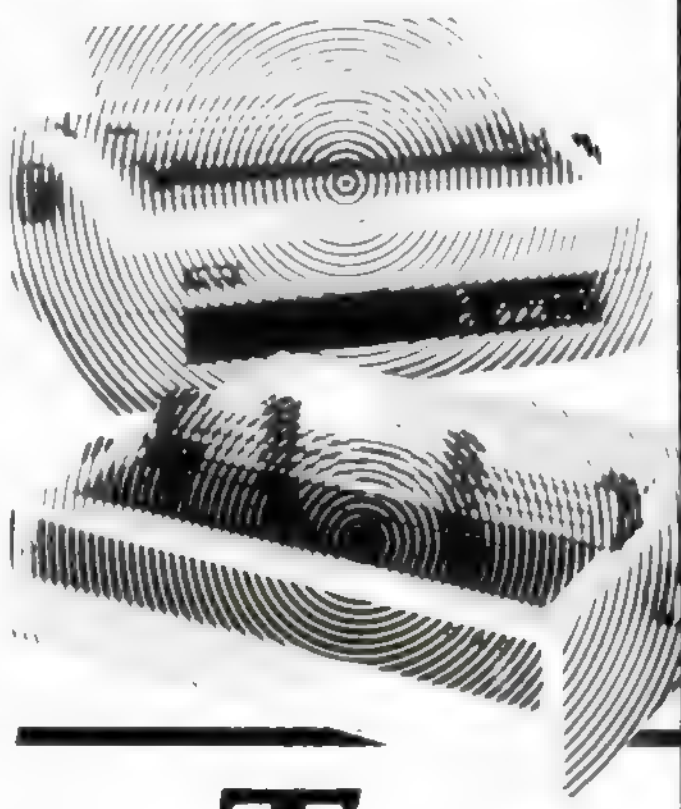
There are three types of LQPs: the original models, which print at 25 to 80 characters per second (cps), the newer 12- to 18-cps models, and the converted typewriters, which print at rates of 12 to 15 cps. All three types function as LQPs when connected to a computer, and some of them may also be used as conventional typewriters. Deciding which type of printer to purchase depends on your needs and on the built-in features of both the printer and the programs you will use.

Converted Typewriters

These are the least expensive LQPs, and one of the conversion kits may be compatible with the typewriter you already have. Generally, a typewriter-to-printer conversion can be made on an electric or electronic typewriter. The difference between the two is that the electric typewriter uses a manual operation (pushing down a key) to produce a character; an electronic typewriter can receive a signal that designates a character, so the mechanical operation isn't always necessary.

To convert an electric typewriter for use with a PC, special devices are available that fit over the typewriter's keys; each time the signal for a character reaches this device, a plunger strikes th appropriate key. Such conversion kits als have a small box of electronics that route the signals from the computer to the top of-typewriter device. (These "kits," by th way, are not like model airplanes or elec tronics projects that you assemble; yo merely have to install the keyboard devic and connect the control box by cable to th computer.) When you want to liberate th typewriter from its plungers, you can usu ally lift off this special cover and operat the machine the old way.

Another common form of converte typewriter utilizes an electronic mode along with an external signal box or a con trol card that is installed inside the type writer's case. Both of these devices contro the printing with electronic signals, by passing the keyboard altogether. When th machine is not working as part of the com puter system, it can be used as a typewri er. Several such conversions of the Olivet



TODAY, the distinctions between printer and typewriter have blurred, the costs have come down, and the speeds have improved.

Praxis electronic typewriters are available for the PC.

A NEW USER SERIES FOR THE IBM PERSONAL COMPUTER

Designed to introduce and explain basic programming languages, machine functions and user applications, from beginning through moderately advanced. Each text includes a broad range of examples, programs and exercises to encourage familiarity and creativity with the new, trend-setting IBM personal computer.



(A) PROGRAMMING THE IBM PERSONAL COMPUTER: UCSD PASCAL

Seymour Pollack, 256 pp., paper $16.95* ISBN-0-03-062637-4

"The Portable IBM PC Pascal!" Emphasizes the syntax of UCSD Pascal and good program design. An ideal introductory text/tutorial to be used informally, or in classroom or training situations. Includes full coverage of the system and its uses, basic and advanced UCSD p-System™ functions. Easy to understand, user-oriented, reinforces working knowledge and application.

(B) YOUR IBM PERSONAL COMPUTER: BASIC AND APPLICATIONS

David Cortesi, 304 pp., paper $16.95* ISBN-0-03-061979-3

Intended to get the first-time user over the hurdle of the initial introduction to the new machine. Provides a non-threatening, "confidence-building" introduction to the Personal Computer and to computing, basic language and software (VisiCalc®, word processing, etc.). An ideal introductory text/tutorial to be used informally, or in classroom or training situations. Focuses on central programming concepts, emphasizing IBM's version of MICROSOFT BASIC.

(C) PROGRAMMING THE IBM PERSONAL COMPUTER: BASIC

Neill Graham, 256 pp., paper $16.95* ISBN-0-03-061911-4

An introduction to programming in BASIC language. Users can apply material directly to their machine, with no adaptation necessary. An ideal introductory text/tutorial to be used informally, or in classroom or training situations. Covers the unique features of the IBM Personal Computer, elements of BASIC and programming, and various applications (text editor programs, program for storing and retrieving information from random files, etc.).

(D) PROGRAMMING THE IBM PERSONAL COMPUTER: FORTRAN 77

Robert Rouse & Thomas Bugnitz, 304 pp., paper $16.95* ISBN-0-03-062042-2

Examples, problems and exercises drawn from the sciences and engineering teach the Fortran 77 language on the IBM Personal Computer. An ideal introductory text/tutorial to be used informally, or in classroom or training situations. Introductory and advanced topics, with special emphasis on use of IBM's unique Fortran Compiler.

PC WRITERS: Let Me Know Your Book/Software Ideas . . . Contact Brete Harrison, Editor

More To Come . . .

In this exciting new "PC" series . . .

PROGRAMMING THE IBM PERSONAL COMPUTER: PASCAL
Neill Graham, paper $16.95*

PROGRAMMING THE IBM PERSONAL COMPUTER: UCSD p-System™ WITH FORTRAN 77
Robert Rouse & Thomas Bugnitz, paper $16.95*

PROGRAMMING THE IBM PERSONAL COMPUTER: UCSD p-System™ WITH PASCAL & FORTRAN 77
Seymour Pollack, Robert Rouse, Thomas Bugnitz, paper $16.95*

USING THE IBM PERSONAL COMPUTER: VISI-CALC®
Robert Crowley, paper $19.95*

USING THE IBM PERSONAL COMPUTER: MACRO-ASSEMBLER
Mark Franklin, paper $19.95*

USING THE IBM PERSONAL COMPUTER: GRAPHICS
Jeffrey Posdmer, paper $16.95*

CBS EDUCATIONAL & PROFESSIONAL PUBLISHING
383 Madison Avenue, New York, New York 10017
Nationwide: 800-227-1617 ext. 336
California: 800-772-3545 ext. 336

MAIL TODAY FOR 30 DAY FREE TRIAL

To: **Deborah Mitera**
CBS EDUCATIONAL & PROFESSIONAL PUBLISHING
383 Madison Avenue, New York, N.Y. 10017

Indicate Book By Letter Code

☐ A ISBN-0-03-062637-4 ☐ B ISBN-0-03-061979-3
☐ C ISBN-0-03-061911-4 ☐ D ISBN-0-03-062042-2

Name _____

Company _____

Street _____

City _____ State _____ Zip _____

☐Bill me, including shipping and handling charges plus applicable sales tax.
☐Check enclosed for . .

Total Amount of Order	1. _____
Local Sales Tax (% x Line 1)	2. _____
Shipping (5% x line 1)	3. _____
Handling	_____
Amount Due	_____

*Prices subject to change without notice

SEASON'S GREETINGS

HARDWARE

VIC 20 229

DISK DRIVES

TANDON FLOPPY ..... CALL!
DAVONG HARD DISC SYSTEMS ..... CALL!

OKIDATA

MICROLINE 80 359
MICROLINE 82A 489
MICROLINE 83A 739
MICROLINE 84A 1179

C. ITOH

PROWRITER 100 CPS 489
PROWRITER 120 CPS 639
PROWRITER 15" 789
F10-55 CPS 1799
F10-45 CPS 1449

IDS

PRISM PRINTER 80 789
PRISM PRINTER 132 1689

STANDARD 4 COLOR, 132 COL., 200 CPS, AUTOSHEET FEEDER MONITORS

AMDEK VIDEO 300 179
AMDEK VIDEO 100 99
BMC 12" GREEN 89
SANYO 12" GREEN 279
ZENITH 12" GREEN 129

HAYES

CHRONOGRAPH 189
SMARTMODEM 224
1200 BAUD SMARTMODEM 589

SOFTWARE

VISICORP

VISICALC 184
VISICALC ADVANCED ..... CALL
VISICALC VBF ..... CALL
VISIFILE 229
VISITREND 229
VISIPLOT 229
VISIDEX 184
VISITERM ..... CALL
DESKTOP PLAN III 229

MICROPRO

WORDSTAR 279
SUPERSORT 154
MAILMERGE 99
DATASTAR 239
SPELLSTAR 149
CALCSTAR 189

ASHTON-TATE

dBASE II 529
dUTIL 68

SORCIM

SUPERCALC 189

EAGLE

MONEY DECISIONS 119

ISM

MATHEMAGIC 79
GRAPHMAGIC 79

DENVER SOFTWARE

EASY ACCOUNTING SYSTEM 579

SOFTWARE

ISA

SPELLGUARD 189

MICROSTUF

CROSSTALK 117

ISA

TIM III 399

COMSHARE TARGET

MASTER PLANNER 269
PLANNER CALC 69

CONTINENTAL

HOME ACCOUNTANT 129

HARDWARE

MEMORY BOARDS

MICROSOFT ..... CALL!
SEATTLE COMPUTER ..... CALL!

QUADRAM

MEMORY, SPECIAL PORT, PARALLEL PORT, AND REAL TIME CLOCK

64K RAMCARD 499
128K RAMCARD 599
192K RAMCARD 699
256K RAMCARD 799

DISKETTS

MAXELL MD1 ..... 31.25
MAXELL MD2 ..... 47.10

CALL TOLL FREE:
1-800-523-9511

IN PA:
1-215-868-8219

SEASON'S GREETINGS
TO
THE MICROHOUSE MANUFACTURERS

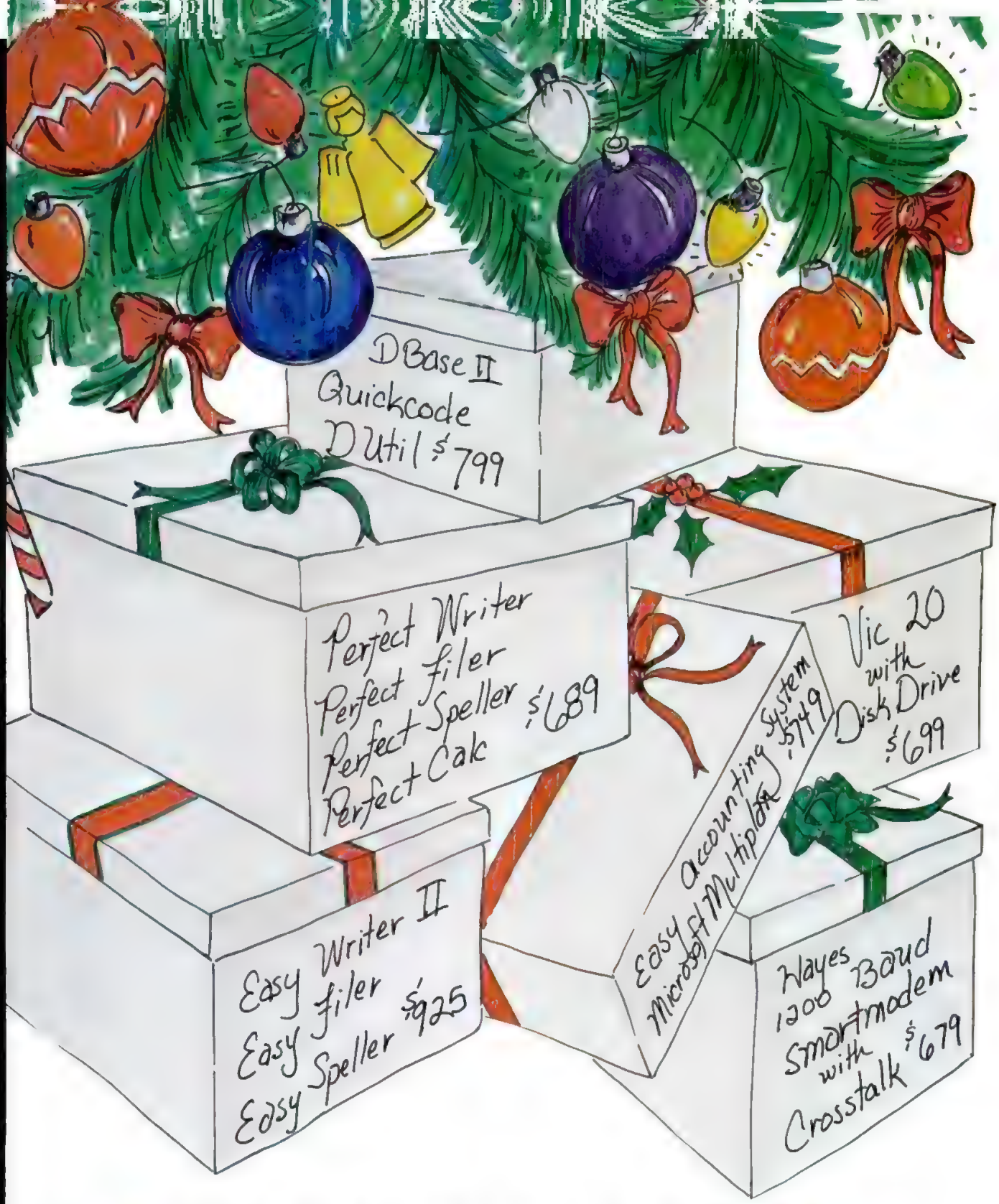
- ALTOS
- AMDEK
- ANADEX
- ASHTON-TATE
- BAYAD
- CALIFORNIA COMPUTERS
- C. ITOH
- COMSHARE TARGET SOFTWARE
- DENVER SOFTWARE
- EAGLE SOFTWARE
- ELEPHANT
- EPSON
- FORCE II
- FOX & GELLER
- FRANKLIN
- HAYDEN
- HAYES
- INTEGRAL DATA SYSTEMS
- INTERACTIVE STRUCTURES
- INNOVATIVE SOFTWARE APPLICATIONS
- INFORMATION UNLIMITED SOFTWARE
- MAXELL
- MICROPRO
- MICROSOFT
- MICROTEK
- MORROW
- MOUNTAIN COMPUTERS
- M&R
- MICROSTUFF
- NEC
- NOVATION
- OASIS
- OKIDATA
- PERFECT SOFTWARE
- PEACHTREE SOFTWARE
- QUADRAM
- SANYO
- SCITRONICS
- SILICON VALLEY SYSTEMS, INC.
- SORCIM
- SORRENTO VALLEY ASSOCIATES
- SYNETEX
- SYSTEMS PLUS
- TCS
- TELEVIDEO
- VENTEL
- VIDEX
- VISICORP
- WABASH
- ZENITH

DEALERS INQUIRIES INVITED

MICROHOUSE

1444 LINDEN ST./P.O. BOX 498, BETHLEHEM, PA 18016

PRICES AND AVAILABILITY SUBJECT TO CHANGE



HOLIDAY PACKAGES

CALL US ABOUT YOUR FREE GIFT WITH PURCHASE



We're Expanding Your IBM-PC* With Reliable Hard-Line Thinking

Let's cut through all the "compu-babble" about hard-disk systems with some hard-line thinking.

You want a hard-disk system for your IBM-PC* for some fairly basic reasons:

- More storage capacity than your present system
- Faster retrieval and storage of information
- Accurate processing with reliable hardware and software

PERCOM DATA was pioneering critical, reliable data separation functions for micro systems long before many of today's companies even began. PERCOM DATA's solid industry reputation is your promise of hard-disk performance, from a drive with specifications equal to or superior to your own system.

PERCOM DATA 5¼ inch PHD's™ are your easy, hard-line answer. These units are available in 5, 10, 15 and 30 megabyte models. The First Drive unit has a microprocessor-based drive controller, permitting you to add up to 3 more hard-disk PHD's. And PHD series prices begin at under $2500.

So, if you're ready to expand your IBM-PC, do it with PERCOM DATA's PHD. Our hard-line thinking of more than half a decade means you get a reliable, high-quality PERCOM DATA peripheral, backed by the PERCOM DATA Performance Promise.

Take a hard-line of your own today! Call one of our Sales Consultants for more information and specifications or for the name of your close-by PERCOM DATA Dealer.

PERCOM DATA's Hard-Line Hotline is 1-800-527-1222

PERCOM DATA
CORPORATION

Expanding Your Peripheral Vision

DRIVES • NETWORKS • SOFTWARE

11220 Pagemill Road Dallas, Texas 75243 (214) 340-7081
1-800-527-1222

*IBM is a registered trademark of International Business Machines

Copyrighted material

Conversion mechanisms offer low-udget alternatives for professional-style rinting, but they can also cause more ear on a typewriter than conventional se. If you operate a converted typewriter ntinuously at its top speed (usually 12 to 5 cps), some of its 2,000 to 3,000 parts ould move out of alignment or even fail oner than under normal office condi-ons. Make certain that you can obtain ervice for your typewriter and that you ill not void your warranty or mainte-ance contract. This is not to say that you houldn't consider using a converted type-riter as a printer; IBM offers a converted electric as the low-cost printer with its Displaywriter word processing system.

nexpensive, Low-Speed LQPs

The latest group of LQPs to hit the mar-et includes several printers that operate t relatively slow speeds (12 to 18 cps) and re manufactured by typewriter compan-es. Smith-Corona and Brother, for exam-le, offer LQPs for about $1,000. Although hese machines do not have keyboards nd cannot function as conventional type-vriters, they are subject to less wear be-ause of their smaller number of parts and heir design for use with a computer. They re also comparable in price to many of the onverted typewriters, and they don't ave the external control boxes or key-oard covers that some of the converters equire. This type of printer may be the ppropriate option for you if you don't eed a typewriter (such as if you already ave one that can't be converted) and you ust keep your spending to a minimum.

Moderate-to-Expensive, Medium-to-Fast LQPs

The top-of-the-line LQPs include several machines from well-established manufacturers and a newcomer that is currently the fastest of the bunch. The medium-speed machines include the NEC 3550 Spinwriter (the official IBM LQP, as noted previously), and other models of NEC's 3500 series, all of which print at a top speed of 33 cps and sell for $1,800 to $2,350. NEC also makes 55-cps Spinwriters (formerly the 5500 series, now called the 7700 series); these printers sell for $2,500 to $3,600. Comparably paced and priced LQPs in this category are offered by Diablo, Qume, and C. Itoh, and the Fujitsu printer outpaces all others at 80 cps (at a cost of about $3,000).

See the "User Guide to Printers" accompanying this article for a list of manufacturers, model numbers, features, and prices of LQPs that have been reliably interfaced with the PC.

Daisy Wheels and Thimbles

Most LQPs and recent-model electronic typewriters use a daisy wheel as the printing element. The daisy wheel is a small plastic or metal disk that has a recessed area at the center and 90 to 100 petal-like pieces radiating out from the center (Figure 1). At the end of each petal is an embossed character. When the daisy wheel is attached to the printer, it spins according to the electronic signals that indicate the characters to be printed. The appropriate letter or symbol is lined up in front of the hammer and is struck from behind by it; the character hits the ribbon and is printed on the page. Considering that this sequence happens from 12 to 80 times per second, you can begin to guess why an LQP's cost is in the $1,000 range.

Not only is great speed required for daisy wheel printing, but precise tolerances must be met so that all characters are printed at equal distance from one another and with equal horizontal and vertical alignment. If a printer is not producing properly spaced text, the problem may be one of two things: either the daisy wheel's positioning mechanism may need adjustment (which must be done by someone experienced at this task) or you have a poor-quality daisy wheel. A change in daisy wheels can tell you if it's the latter problem. If the capital letters all print a little higher or lower than the lowercase letters, the print mechanism needs adjusting.

If you use daisy wheels, be sure to inspect them carefully at the time of purchase. Occasionally you'll find one that is missing part of a letter, usually the top of an *h*, the bottom of a *p*, or a similar stem-like portion.

One manufacturer—NEC—uses thimbles instead of daisy wheels in its LQPs. The thimble resembles its namesake and is essentially a daisy wheel that has had every petal folded upward in the middle (Figure 2). Because of its flat surface and vertical position in the printer, the daisy wheel must travel farther to print a series of different characters than does the thimble, which is positioned horizontally and has all its characters closer to the hammer than a daisy wheel. This is one reason why



igure 1: A Daisy Wheel



Figure 2: A Print Thimble

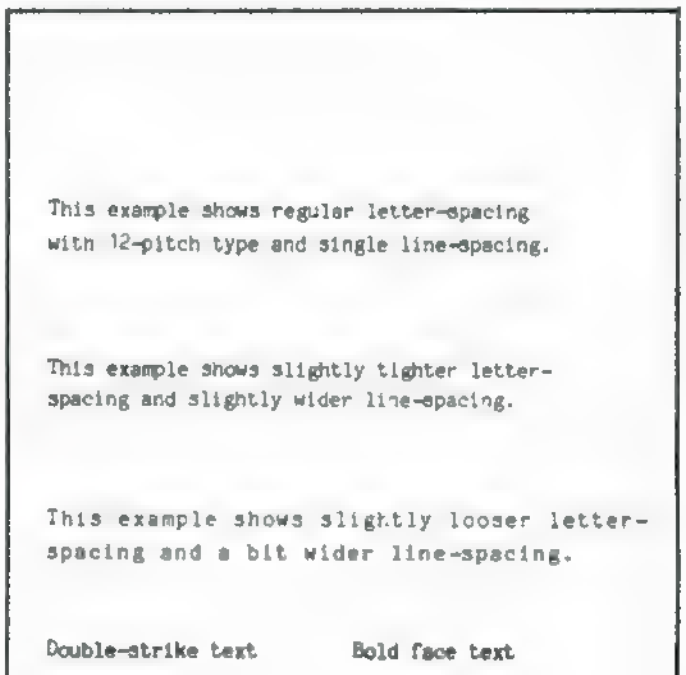


Figure 3: Special Printing Features

NEC's top-of-the-line printers are faster than most daisy wheel printers with comparable technology. (The one exception is the 80-cps Fujitsu, which uses a special gear, called a worm drive, to move the printing element from side to side. This smoother and faster action accounts for much of its increase in speed.)

Size of Characters

Both daisy wheels and thimbles are interchangeable, and most LQPs accommodate two or three sizes of type as well. Type size is commonly described in terms of its pitch, which is measured by the number of characters that can be printed in 1 inch. The standard pitches are 10 (which prints 10 characters to the inch and corresponds to pica type on a typewriter) and 12 (which prints 12 characters to the inch and corresponds to elite type). A less common size is 15 pitch, which produces characters about the size of type used in classified ads. In addition, some LQPs are capable of producing proportional spacing, using a daisy wheel or thimble that contains letters that vary in size (similar to the type used in magazines and books). Proportional spacing requires special codes for each letter, however, and these must be used by the software controlling the printer.

A few printers are capable of printing at one pitch only, although they may offer a selection of type styles within that size. These more limited LQPs are generally the less expensive ones, along with some models of converted typewriters. If you aren't converting a typewriter that you already own, you would be wise to determine whether the printers you consider will accommodate at least 10- and 12-pitch elements, because the price of printers that offer this versatility may be close to that of single-pitch machines.

Bidirectional Printing

Another built-in capability in many letter quality printers is bidirectional printing. This is just what it sounds like—printing while the daisy wheel or thimble is traveling in either direction—and it allows greater speed and causes less wear than a comparable amount of printing by a machine that must return the print element to its leftmost position after each line is printed. A few of the low-cost LQPs cannot print bidirectionally and, not surpris-

Letter Quality Printer Spec Sheet

The following letter quality printers have been tested for performance and, to the best of our knowledge, can be reliabl interfaced with the IBM PC.

Printer/Supplier	Model	Speed (cps)	Special Features	Type of Interface	Price*	Comments
BROTHER Kanematsu Gosho, USA 333 South Hope St. Los Angeles, CA 99071 (213) 626-1123	HR-1	16	few	parallel serial	$900- $1,200	bidirectional cassette daisy wheel
BYTEWRITER (uses Olivetti Praxis 30) 125 Northview Rd Ithaca, NY 14850 (607) 272-1132		12	few	parallel	$795	internal interface
COMRITER Comrex Int'l Inc. 3701 Skypark Dr #120 Torrance, CA 90505 (213) 373-0280	CR-1C	16	few	parallel	$1,115	identical to Brother HR-
DIABLO Diablo Systems 26460 Corporation Ave. Hayward, CA 94545 (415) 786-5200	630	40	many	parallel serial	$2,400- $3,000	can use plast or metal daisy wheel
ESCON TYPEWRITER INTERFACE (for Olivetti or IBM electronic Selectric) Escon Products 12919 Alcosta Blvd. San Ramon, CA 94583 (415) 820-1256				parallel serial	$435- $599	switch for mode selectio
FUJITSU Fujitsu America 2945 Oakmead Village Ct. Santa Clara, CA 90505 (408) 727-4300	SP830	80	many	parallel serial	$2,800- $3,600	can use plast or metal daisy wheel
C. ITOH STARWRITER Leading Edge Products 225 Turnpike St. Canton, MA 02021 (800) 343-6833	F-10	40	many	parallel serial	$1,895	includes seri and parallel interfaces
NEC SPINWRITER (also IBM NEC Information Systems 5 Militia Dr. Lexington MA 02173 (617) 862-3120	3550 3500 series 7700 series	33 33 55	many many many	parallel parallel serial parallel serial	$2,350 $1,800- $2,300 $2,500- $3,600	made for th PC new seri excellent record of reliability

nter/Supplier	Model	Speed (cps)	Special Features	Type of Interface	Price*	Comments
RAXIS LECTRONIC TYPEWRITER livetti 5 White Plains Rd. rrytown, NY 10591 14) 631-3000					$500- $700	several conversions available
CME ume Corporation 50 Qume Dr. n Jose, CA 95131 08) 942-4000	Sprint 9	45 55	many many	parallel serial	$2,400- $3,000	newly designed for easy maintenance
LLUM 1C 0 Charcot Ave. n Jose, CA 95131 08) 263-9510	N-35 N-77 F-86	33 55 80	many many many	par & ser par & ser par & ser	$2,495 $3,295 $2,900- $3,600	all models have 16K buffer and 3 major protocols
ITH-CORONA nith-Corona Locust Ave. ew Canaan, CT 06840 03) 972-1471	TP-1	12	few	parallel serial	$750- $900	unidirectional printing only
ITH-CORONA TRASONIC (Typewriter th SuperCord) bany Typewriter & mputer 3 San Pablo Ave. bany, CA 94706 15) 526-1959		10	few	parallel	$795	converted typewriter
PERCORD (interface r Smith-Corona traSonic typewriter) rd Limited 48 Brookhollow Dr. nta Ana, CA 92705 14) 751-3587					$395	
RPRINTSOFT ftware for serial inter interface) ternational Computers O. Box 13547 exico Beach, FL 32410 04) 648-8484					$79.95	

ices are ranges compiled from advertising.

ingly, a conversion kit does not give this capability to a typewriter.

Paper Feed

LQPs generally handle paper in much the same way as typewriters. The paper is held between the platen and the body of the machine, and it advances as the platen turns. Of course this advancement of the paper happens automatically in a printer, because the computer's signals to the printer include instructions to turn the platen after a line has been printed and to move the paper out of the machine when the printing is completed.

LQPs can handle paper in two ways that typewriters cannot. Because of their ability to advance paper automatically, printers can use continuous-form paper (also called fanfold), which consists of standard-size sheets joined by perforations at the top and bottom. Most continuous-form paper also has perforated, detachable borders on each side; these border pieces contain evenly spaced holes that fit into the pins on a "tractor"—the second LQP advantage over a typewriter's paper handling. For long printing jobs, and particularly for high-precision tasks such as printing labels, a tractor feed mechanism for the printer may be essential. This rather unwieldy paper guide pulls the paper through the printer and keeps it from creasing or slipping sideways, which is fairly common when using friction feed for a long job.

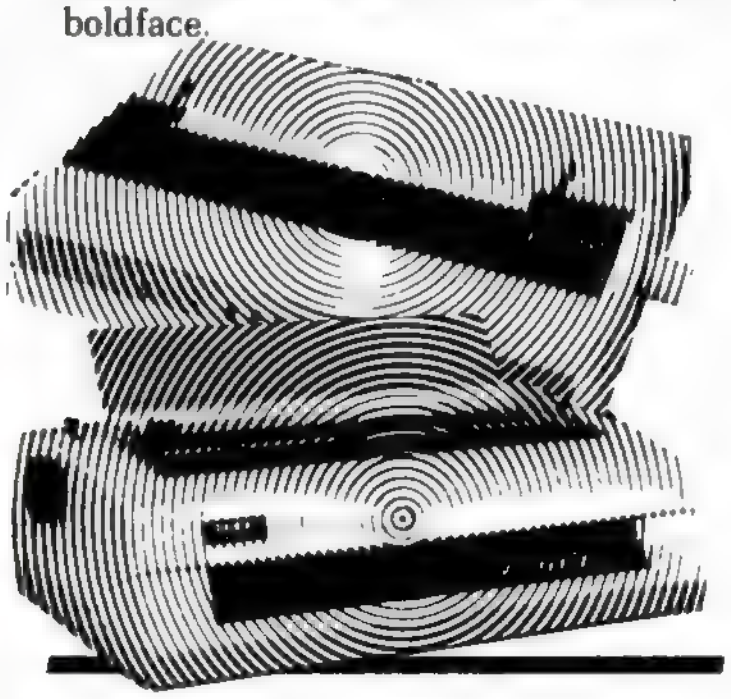
Noise

One last, unfortunate characteristic of all LQPs is their noise. Although foam insulation inside the printer's cabinet and a sound-absorbing pad underneath the machine can lessen some of the rat-a-tat-tat, the decibel level of any LQP will make thinking or conversing difficult or impossible while the printer is in operation. One solution to printer noise is a special sound-controlling cabinet, but this product costs $500 or more.

Printing Speed

The speed of LQPs—and all printers for that matter—is one of their most widely touted features. The printer's ability to turn out work on time may be crucial to the survival, or at least the credibility, of a business. Yet the claims made about various printers' speeds and the machines' ac-

tual performance may be quite different. Actual speed depends on the software controlling the printer, the format of the document being printed, and special printing features such as underlining or boldface.



COMPARE *actual printing speeds rather than advertised test results.*

LQPs fit into two speed groups: the slow typewriter-like models (12 to 18 cps) and the medium-to-fast ones (25 to 80 cps). These figures, which generally are cited in the manufacturers' literature and advertisements, are often measures of a printer's "burst" speed—its fastest run when printing unadorned text. Burst figures are like the estimated miles per gallon featured in every ad for a new car; they are useful for rather sketchy comparisons but they must be taken with a hefty grain of salt. (For the results of PC's own speed test along with a copy of the test, see the "PC Speed Test for Printers.")

Whatever the advertised speed of an LQP, the real issue is the machine's production of printed pages. Production rates vary among printers, but it is possible to translate characters per second into an approximate figure for minutes per page. For example, a medium-speed LQP (advertised at 25 to 35 cps) will print a full page of single-spaced text, such as a business letter, in about 1½ to 2 minutes. A slow LQP or converted typewriter (12 to 18 cps advertised speed) will take anywhere from 3 to 6 minutes for the same printing job. When these figures are considered as part of office production time and another ½ minute is added to allow for inserting individual sheets of stationery for business letters, the printer's speed has an obvious impact on the day's work.

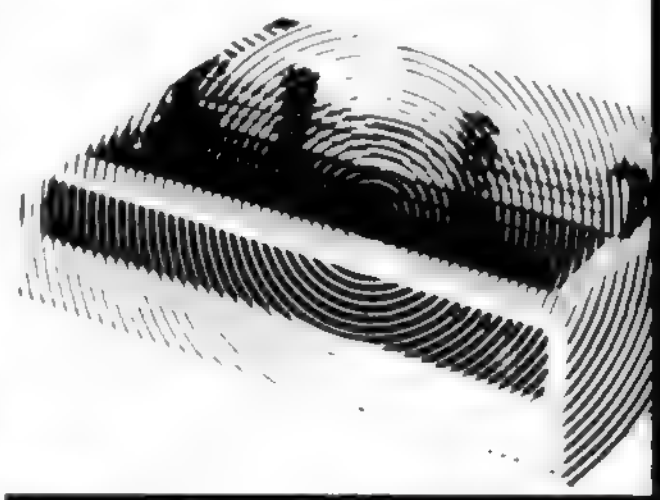
The best way to determine a printer's speed and usefulness is to see it in action with a job you would really assign it. In most instances this means making the rounds of dealers and computer-owning friends with your own ready-made test on disk, hooking up to each printer you're considering and timing the printing job with a stopwatch. If you test all LQP candidates this way and under the same conditions, you can use the results to rate the printers and to project how long each machine will take for the volume of work you must perform.

The key measure of what type of LQP you need—fast and more costly or slower and less costly—is the tasks for which you will use the machine. You should also anticipate future needs. There's no sense in saving a few hundred dollars on a slow printer if your work load will keep that machine printing all day (and thereby slow up all your other work on the computer) or threaten to overload it in the future. If you can stretch your budget at all, it would be wise to buy a printer that is faster than you presently think you'll ever need. A few months down the road, when deadlines are hovering, that formerly astounding 35 cps may seem to drag, and 18 cps may resemble a very loud snail.

Special Printing Features

Certain other built-in capabilities separate the more sophisticated LQPs from the bread-and-butter models. In most instances these features are controlled by software, such as the various word processing programs available for the PC. For certain types of business documents or professional manuscripts and reports, printing enhancements such as boldface type, underlining, and subscripts or superscripts could be essential. Most LQPs that can do any one of these operations can usually do all three because the printer simply must type a character and either not advance or back up to the previous position and then type another character. Thus, any printer or typewriter with a backspace key should be able to perform these operations.

The alternative type of boldface prin ing, as well as a variety of other manipul tions of spacing between characters, is a complished through microspacing. LQ that offer this feature can be directed b software to print characters closer toget er or farther apart than the regular 10- 12-pitch type. Usually this variable spa ing is done in increments of 1/120 of a inch; for example, boldface characters a often printed by making one impression a letter, then reprinting that same lett 1/120 of an inch to the right. Shadow prin ing works the same way except that som software allows the user to specify ho many times each character will be prin ed, offset by 1/120, and reprinted.



IBM DID NOT *offer an LQP when the PC was released, so users and dealers were left to their own resources for the tricky job of finding compatible printers.*

Microspacing is often used to make te more readable, to design dramatic hea ings or passages of text, and to compre text so that more words fit on a page. addition, much of the software that is c pable of justifying text uses microspaci to even out the spaces between words an letters within words. Examples of te printed with variations in microspaci are presented in Figure 3.

Even if a printer cannot do microspa ing, it might be able to print justified te Like most such features, this one is so

WORD CHALLENGE™

AN INTELLIGENT WORD GAME FOR YOUR IBM PERSONAL COMPUTER

ENTERTAINING
EDUCATIONAL
COMPETITIVE
A GAME FOR ALL AGES
USING A 90,000 WORD
ENGLISH VOCABULARY



W MANY WORDS
IN YOU FIND?

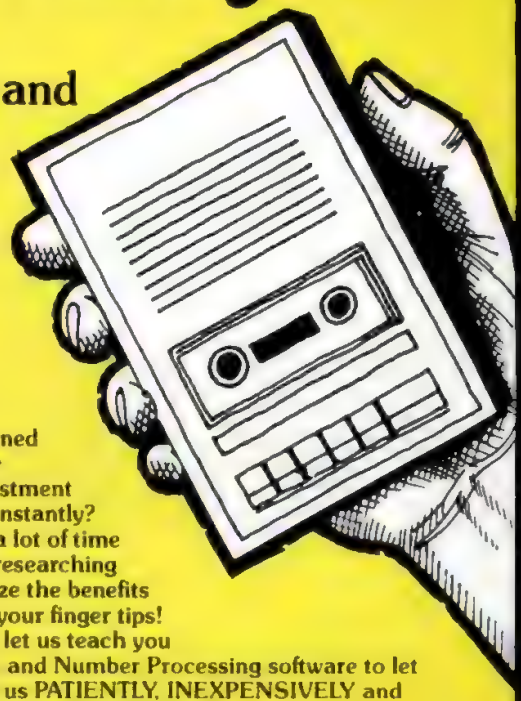
29.95. SEE YOUR IBM
RSONAL COMPUTER DEALER

CALL 305--565-2188.
STER CARD & VISA ACCEPTED

PROXIMITY™
3511 N.E. 22nd Avenue
Fort Lauderdale, Florida 33308

You, your child or your secretary

can now use your computer and never have to open a book!



One hour of easy listening replaces all the confusing written manuals usually required to begin using your new computer.

When the computer is unpacked and the power is turned on, you are anxious to do more than merely admire the attractiveness of your new computer. You made an investment for a purpose! Why not get the system up and running instantly?

If your application is business, you don't really have a lot of time to study the BIG THICK MANUALS! They are fine for researching more advanced applications. For now you want to realize the benefits of the word and number processing power available at your finger tips!

Buy the Computer you have your heart set upon and let us teach you how to manipulate the operating system. Buy the Word and Number Processing software to let it perform all your important business functions and let us PATIENTLY, INEXPENSIVELY and INSTANTLY get the system down to the business of producing RESULTS!

Available nationwide at "The Xerox Stores," participating Computerland Stores and other selected dealers.

MOST PRICED UNDER $40

These "plain language" condensed user's manuals are available now in standard audio cassette. Many others are being developed and will soon be available...

Apple II +[1]	IBM-PC[3]	CP/M Gen'l[14]	DataStar[12]	SuperCalc[10]
Cromemco[15]	Osborne 1[4]	CP/M 86[14]	DB Master[18]	SuperWriter[19]
Franklin[17]	Sony[19]	CalcStar[12]	Exec Sec'y[13]	VisiCalc[11]
H/Z-89[2]	Toshiba[20]	Condor[11]	EasyWriter[9]	WordStar[12]
Z/100[2]	Xerox 820-II[5]	dBase II[16]	Magic Wand[7]	Adv. WordStar[1]
			PowerText[8]	

DEALERS:

Add a CUSTOMER SUPPORT department to your store. Use your time for SELLING not TEACHING! Your customers will have their new computer up and operating the day of purchase! END the USER MANUAL MYSTERY, stock MICRO Instructional tapes!

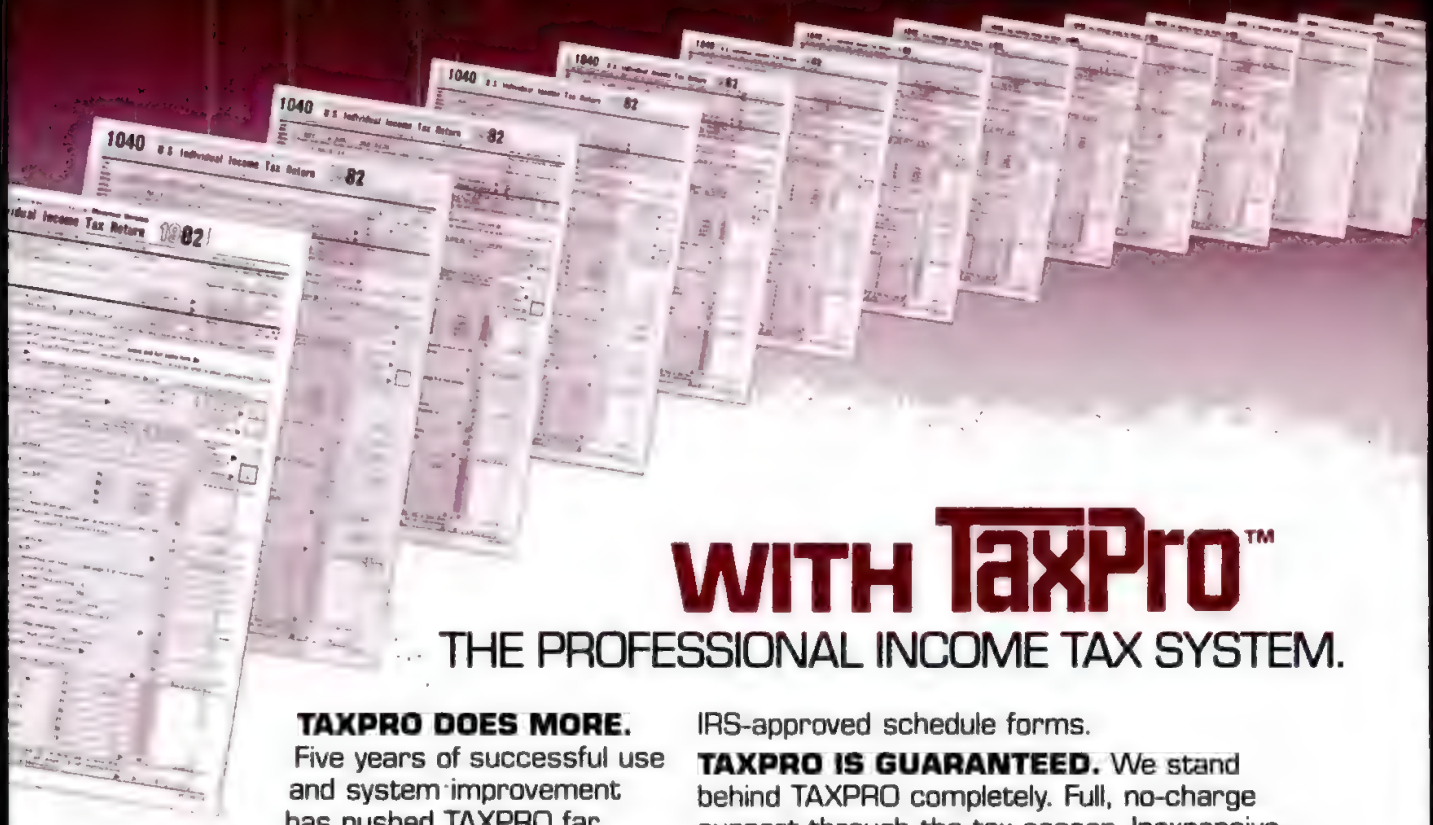
TRADEMARKS OF 1 Apple Corp., 2 Heath Company/Zenith Radio Corp., 3 IBM Corp., 4 Osborne Computer Corp., 5 Xerox Corp., 6 Ashton Tate, 7 Peach Tree, 8 Beaman-Porter, 9 I U S., 10 Sorcim, 11 Visicorp, 12 MicroPro Int Corp., 13 Sof Sys, 14 Digital Research, 15 Cromemco, 16 Condor Computer, 17 Franklin Computer Corp., 18 Stoneware, Inc., 19 Sony, 20 Toshiba Electronics

Copyright 1982 MICRO Instructional Inc

MICRO

INSTRUCTIONAL INC 6299 W. SUNRISE, FT. LAUDERDALE, FL 33313, (305) 584-3133

INCOME TAX OFFICES:
MULTIPLY YOUR OUTPUT.



WITH TaxPro™
THE PROFESSIONAL INCOME TAX SYSTEM.

TAXPRO DOES MORE. Five years of successful use and system improvement has pushed TAXPRO far beyond Form 1040 and its supplemental schedules. This versatile system also totals W-2s, computes FICA overpayment, calculates tax alternatives . . . even prepares client billing.

TAXPRO IS INTELLIGENT. It analyzes the client's tax picture, suggests the best route to go. Determines eligibility for special forms such as minimum/maximum tax, income averaging, to name a few.

TAXPRO IS EASY. Because it follows the tax forms line by line. Taxes are automatically figured, entered everywhere they apply. Change any entry, and all relevant data is automatically revised. Produces a printout that exactly fits 1040 and IRS-approved schedule forms.

TAXPRO IS GUARANTEED. We stand behind TAXPRO completely. Full, no-charge support through the tax season. Inexpensive, yearly system updates. Over 5 million returns prepared with no reported errors.

TAXPRO BUILDS PROFITS. The door is open to higher profits than you have ever enjoyed. Double, triple, or quadruple your output; pay for TAXPRO **and** the computer in one tax season.

If you do income tax returns, you need TAXPRO, the truly professional, computerized income tax preparation system.

Look into it today.

Contract Services Associates,
706 South Euclid,
Anaheim,
California 92802,
(714) 635-4055.

45-PAGE DESCRIPTIVE SYSTEM MANUAL: $7.50

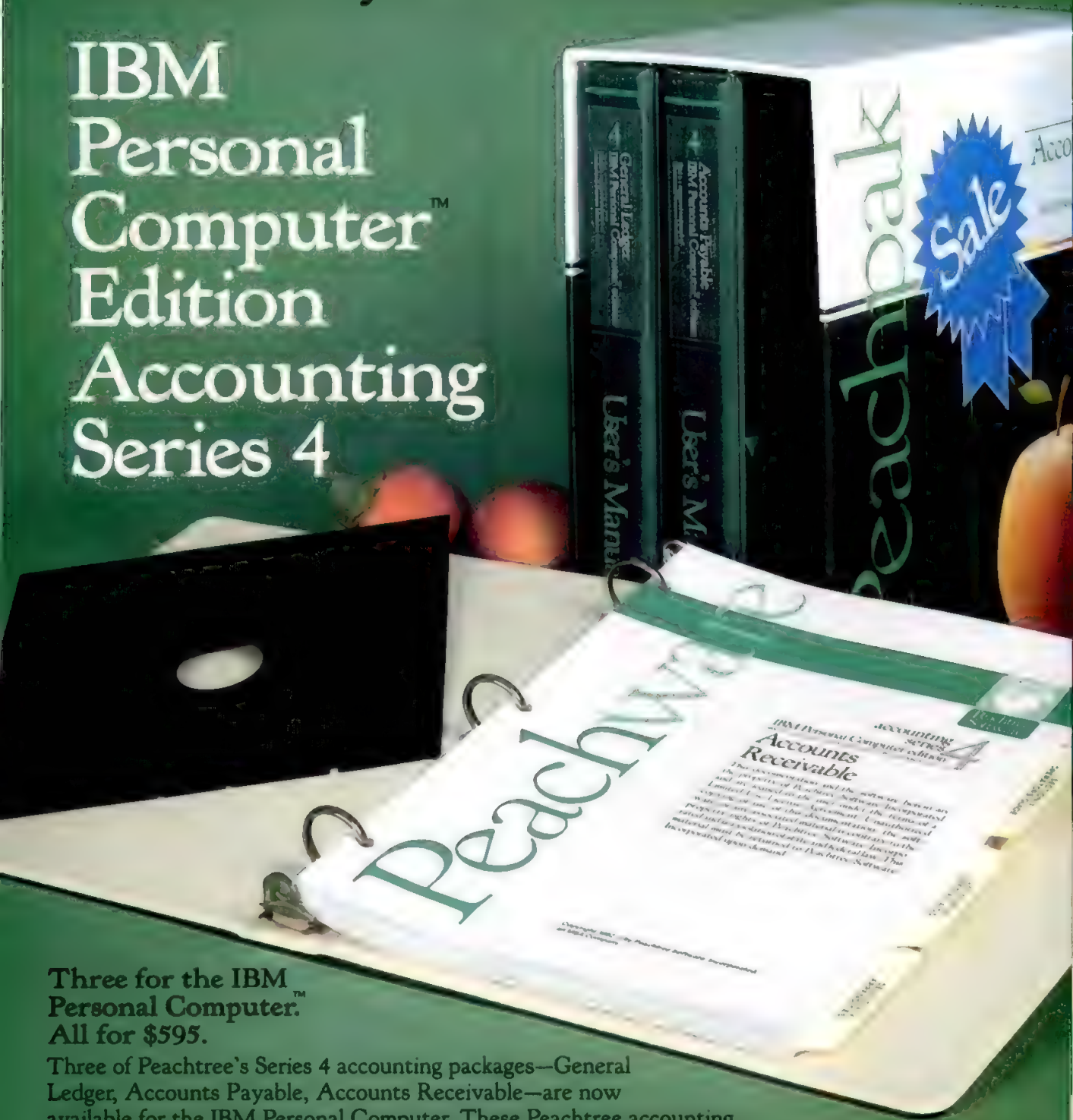


CSA CONTRACT SERVICES ASSOCIATES

Improving the bottom line.

Introductory Sale Price–Three for $595

IBM Personal Computer™ Edition Accounting Series 4



Three for the IBM Personal Computer.™ All for $595.

Three of Peachtree's Series 4 accounting packages—General Ledger, Accounts Payable, Accounts Receivable—are now available for the IBM Personal Computer. These Peachtree accounting applications serve as an alternative to the BPI product offered by IBM. This Series 4 Peachpak is designed for businesses that don't require the more advanced accounting features of IBM's Peachtree accounting packages.

Peachpak and Peachtree are trademarks of Peachtree Software Incorporated. IBM is a trademark of International Business Machines Corp.

Please send me further information about the special Peachpak for the IBM Personal Computer.

Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

I am a: ☐ prospective dealer ☐ user of software

Peachtree Software

Peachtree Software Incorporated an MSA company 3445 Peachtree Road, N.E. / 8th Floor / Atlanta, Georgia 30326 / (404) 239

controlled; the nonmicrospaced ver- of justified text creates the same right in for each line but spreads the text o meet that margin by adding spaces een words (not between letters). At one of the popular word processing rams written for the PC uses this od of justification.

lany of the simple LQPs are limited to ing single- or double-spaced text possibly space-and-a-half or triple- ed). With appropriate software con- he more advanced printers can print rscripts and subscripts by moving the n a half-line up or down.

addition, these printers can usually irected to space lines in any incre- of 48ths of an inch. For example, sin- pacing prints six lines per inch, so each line is 8/48 of an inch high. To achieve a slightly more open look to a page without going to space-and-a-half (which would be 12/48), you might specify a line height of 9/48 or 10/48. This flexibility in line spacing can be very useful when you want to limit a document to a single page but have too much text for the conventional format.

Interfacing: The Critical Connection

IBM did not offer an LQP when the PC was released, so users and dealers were left to their own resources for the tricky job of finding compatible printers and making them work properly with the new computer. As 10 months of free-form interfacing have proven, this was not always easy. Technical advisors from IBM and the dealers' experiences with connecting printers to other types of systems were helpful, but the PC's resident hardware and initial software made the job more difficult.

The early hardware complications involved the type of interface available for the printer. Either a serial port (RS-232C) or a parallel port (Centronics compatible) is needed to send signals to a printer, and neither port is included in the basic system unit of the PC. Most users purchase a monochrome display (or a comparable monitor) with the basic computer, however, and a parallel port is included as part of the board used to operate the display.

A serial port is included on the asynchronous communications board, which

low to Tame Your LQP

rint hints for clean, letter quality copy.

tter quality printers have more features an a typewriter, and sophisticated soft- are can provide still more printing pos- ibilities. Using a printer is not always a atter of rolling in paper and pushing a utton. Here are hints to make your print- g easier, faster, and error-free.

For a quick printing job, you can use e LQP almost as if it were a typewriter. mply write the text on the screen exact- as you want it to print, and then use the rint Screen function of the PC to copy e screen's contents. The position of the per in the printer will affect the place- ent of the text on the page, but you can uickly learn the screen-paper relation- ip by experimenting.

If you use several different types or zes of paper, such as business letter- ad, personal stationery, or envelopes, u can make a simple paper-insertion ide by attaching a small label or piece tape to the top of the printer. Mark the ot where the left edge of each type of per should be when inserted into the inter; print placement will always be e same. If you use a tractor feed mecha- sm for some printing jobs, be sure to ake a guide for it too, because it may re- ire slightly different paper placement.

Make a similar guide to remind you how far to roll the different sheets of paper into the printer to establish the appropriate top and bottom margins. As with the placement for the right and left margins, vertical paper positioning must be coordinated with the page format you use when writing the document. The guide may take the form of a small chart that you tape to the top of the printer or keep nearby. For example, the chart might tell you to line up the top of one type of stationery with the printer's ribbon holder and to roll up letterhead until ½ inch of paper shows above the ribbon holder.

If you do not use a tractor mechanism, be sure to align the box of continuous-form paper directly below the paper's path into the printer. This method will help keep the paper from sliding to one side during long printing jobs. You'll have the fewest problems and unexpected results if you establish standard formats for your routine work and make both a disk file and a printout of those formats. You can keep the printout near your keyboard and copies of the disk file on the various program disks you use, so that you can easily check to see what formatting instructions to include in a file before printing.

If you abandon a printing job before it is completed, check to see whether the printer has stayed at the same spot on the page or automatically moved the paper to the top of a new page. If your printer or software doesn't automatically perform this top-of-page function when you stop printing in the middle of a document, be sure to roll the paper to the top of a new page before printing the next job.

Some printers will occasionally deposit a stray letter at the top of a page when they are turned on or off. If your printer has a tendency to do this, always turn the machine on before inserting special paper, such as stationery, that will be rendered useless by an unwanted character in an unexpected place. The best way to follow the foregoing hints is to experiment with the paper placement and print formatting options at your disposal. When establishing the standard formats you plan to use, create several versions of a letter, manuscript page, and other common documents, and choose the one or two versions that you find most pleasing and professional looking.

If you have seen the results of most formatting options and have given yourself clear instructions for positioning paper in the printer, you will be able to predict your printing results. — *J.J.H.*



If you use a Word Processor, you need

GRAMMATIK™

Beyond Spelling Checking

Grammatik can find **over 15 different** kinds of common errors missed by simple spelling checkers alone, including punctuation and capitalization errors, overworked and wordy phrases, and many others. Use Grammatik with Aspen Software's spelling checker Proofreader, featuring the Random House Dictionary®, or with your current spelling checker for a complete document proofreading system.

Read what the experts say:

"The perfect complement to a spelling checker."
Alan Miller, Interface Age, 5/82

"A surprisingly fast and easy tool for analyzing writing style and punctuation."
Bob Louden, InfoWorld, 12/81

"Anyone involved with word processing in any way is encouraged to get this excellent program."
A.A. Wicks, Computronics, 6/82

"A dynamic tool for comprehensive editing beyond spelling corrections."
Dona Z. Meilach, Interface Age, 5/82

"A worthy and useful addition to your word processing software."
Stephen Kimmel, Creative Computing, 6/82

Works with CP/M®, IBM-PC®, TRS-80®

Grammatik $75.00
Proofreader $50.00

Order directly from Aspen Software, or see your local dealer. Specify your computer system configuration when ordering! Visa, Mastercard accepted.

Random House is a registered trademark of Random House, Inc. Other registered trademarks CP/M Digital Research -- TRS-80 Tandy Corp -- IBM IBM -- Proofreader, Grammatik: Aspen Software Co.



Aspen Software Co.

P.O. Box 339-P Tijeras, NM 87059
(505) 281-1634

some users also have. (Of course, that port is needed for the modem, so a user who has both a modem and a serial printer can use only one device at a time.) The parallel port doesn't have to serve such a dual purpose, so many early PC owners purchased LQPs that utilized the parallel interface.

The other original hardware in question was the cable used to connect the printer and the PC. Although salespeople and advertisements often claim that these connectors are "standard" or "universal" or otherwise simple to plug in and operate, in practice the cables and plugs required vary among different brands of equipment. Dealers and technical whizzes were able to find the correct cables (or modify existing ones); IBM sells only one parallel printer cable for the PC.

IF THE FASTER machine does not have a proven record of reliability and accessible service when compared with the slower model, it may not be the better buy.

Because the initial configuration of the PC assumed a parallel printer (the Epson dot matrix), the original PC-DOS (version 1.0) provided for this type of printer interface. Users who had serial printers had to add special software routines to imitate parallel connections before their printers would function with the DOS. Now that PC-DOS 1.10 has replaced the original, users have an easier time installing a serial printer because they can select either serial or parallel as the mode for the printer (called LPT1 in DOS), and they can set such parameters as baud rate, parity, and stop bit for that port. This mode statement can be made part of the AUTOEXEC.BAT file that loads automatically.

The other operating systems available for the PC—CP/M-80 (which requires a special conversion board containing another CPU) and CP/M-86—also can b configured to work with either a serial or parallel printer. So far, however, PC-DO is the most widely used operating syste

Once the DOS is communicating wi the printer, there may be problems wi various applications programs. Many pr gram designers rushed to ready their pro ucts for the PC, and they often provide only rudimentary installation routines f a printer or assumed that the Epson wou be the printer in use. The more sophistica ed a program's printing features, the mo detailed its operating and installation i struction must be. Enterprising users ar responsive program producers ha solved at least some of these printer-inte face problems, but not all program fe tures will work with all LQPs.

Printer manufacturers have not esta lished standard codes for special printi functions such as microspacing or bol face type. There are presently three maj "protocols" for LQPs, each associated wi one of the three most widely used bran of these printers—Diablo, Qume, a NEC. Most other manufacturers of LQ adopt codes that are compatible with o of these three, but some low-cost printe or converted typewriters may not be e tirely compatible with the protocols. B cause most software producers base the printer-installation routines and instru tions on one or more of these codes, printer that cannot accept any of them m not be able to perform many of the speci operations provided in the software.

PC users had to find their own answe to many of the printer-interface questio forming user groups and electronic bul tin boards such as The Source a CompuServe to provide whatever info mation was available. These organizatio are good places to ask questions and share solutions to hardware or softwa problems. In addition, *User-to-User* r ports precisely this kind of information

In response to the initial problems wi interfacing serial printers to the PC, so software producers have offered pr grams to help with printer installatio The documentation for one such progra *SerPrinSoft* from International Compu ers, claims that it allows users to chan default settings relating to the serial po and prevents lost characters or buff overflow when using DOS 1.0 or 1.10. A other component of this program provid instructions for building cables to conne

The Spelling Bee Is Over

Listen. We're going to let you in on an industry secret: It's not hard to make a good spelling checker.

You see, although spelling checking is new for microcomputers, it's been around on big computers for years. And when you get past all the talk, most spelling checkers work the same way. They compare what you've written with a dictionary–and report the errors.

So is there any difference? You bet: the dictionary, and the price.

Who Checks The Checker?

The hardest part of a spelling checker to make is the dictionary. It's hard to pick the right words–and spell every one of them perfectly. That's why some popular spelling checkers don't even contain real dictionaries. They use formulas called "hash tables." Which make a hash out of your spelling some of the time.

Other spelling checkers "borrow" their words from printed dictionaries –or copy them from old word lists. Or give a programmer who can't spell "programmer" a chance to write his first dictionary. And as though all this wasn't bad enough, a lot of these companies want to charge you $100, or $200 or even $300!

Random House to the Rescue

The Random House ProofReader is based on the famous Random House Dictionary. It is the result of decades of careful work. And it was adapted for computer spelling checking by professional editors, linguists and scholars. So you can depend on it.

Of course, our program is darn good, too. It's fast. It doesn't take up too much disk space. It shows you the error and the sentence it's in. It lets you correct the mistake without reediting. And if you don't know how to spell a word, it suggests the spelling. It even corrects your correction.



The Random House ProofReader comes in sizes to fit all systems: 20,000 words (55K), 32,000 words (74K), 50,000 words (108K) and 80,000 words (180K). You can add your own words with a single keystroke. And it works with all CP/M®, IBM Personal Computer®, and TRS-80® Model I/III word processors.*

How much does the Random House ProofReader cost? Only $50.00. Why do we sell it for $50 when the others want up to $300? Don't ask us. Ask them.

The Random House ProofReader $50

For orders or information, call **505-281-1634.** VISA, Master Card accepted. Or write Random House ProofReader, Box 339-M, Tijeras, New Mexico 87059. Please enclose $50 and specify your computer model, disk size and memory.
Dealer inquiries invited. Call our business office **212-564-0746**

Random House and the House design are registered trademarks of Random House Inc. CP/M is a registered trademark of Digital Research, Inc. TRS-80 is a trademark of Tandy Corporation. IBM and IBM Personal Computer are registered trademarks of International Business Machines Corp. Dictionary copyright © 1982 Random House, Inc. Program and advertisement copyright © 1982 Aspen Software, Inc. The TRS-80 versions do not suggest correct spellings.

ANATRON MULTIFUNCTION RAM BOARD

For IBM Personal Computer

64K, 128K, 192K, or 256K Bytes With Parity

Standard Features

64 KB

Socketed for easy memory expansion

Base address selectable on any 64K boundary

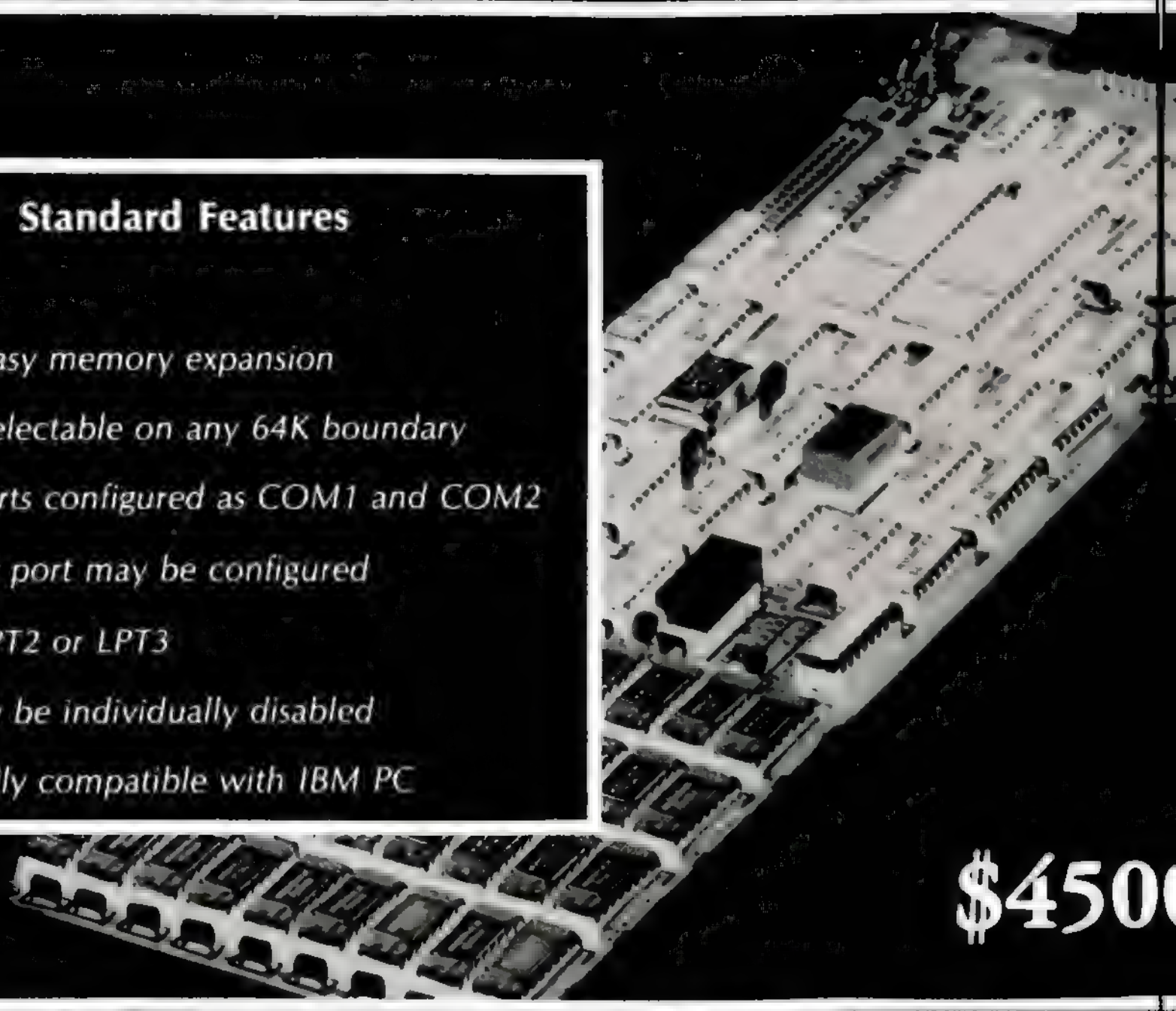
Two RS232 ports configured as COM1 and COM2

Parallel printer port may be configured

as LPT1 or LPT2 or LPT3

Each port may be individually disabled

All features fully compatible with IBM PC



$450

EVERYTHING FOR THE PC

HARDWARE

- Disk Drives:
  - Single Sided [160 kb] $239.00
  - Double Sided [320 kb] $300.00
- RAM Expansion Packages for
  - Mother Board [16 kb] $25.00
  - Memory Expansion Board [64 kb] . . . $130.00
- Printers [NEC, EPSON, OKIDATA] . . . . . $CALL
- Monitors [NEC, TEKO, AMDEK] . . . . . $CALL
- Diskettes [3M single sided / double sided] . . . . . $CALL
- Extension Cables for:
  - Printer . . . . . $CALL
  - Monitor [two cable set] . . . . . $CALL
  - Keyboard . . . . . $CALL

SOFTWARE

- Condor DBMS
- Ed-Word® Screen Editor/Word Processor
- NECPRINT [NEC 8023AC print utility]
- GRAPHDUMP

Prices reflect 3% Cash Discount

More hardware and software coming.
Call for details.

AEGIS SYSTEMS

P.O. Box 401
Terms FOB Saline

202 West Bennett Street, Saline, Michigan 48176

Hours 9 a.m. — 5 p.m. E.S.T.

1-800
Michigan [313[

everal popular LQPs with the PC.

ntelligent Printers

Sellum is one distributor of letter quality printers that adds some additional electronics to them to increase both features

CONVERSION mechanisms offer low-budget alternatives for professional-style printing, but they can also cause more wear on a typewriter than conventional use.

nd compatibility with the PC. Sellum offers three specially enhanced LQPs: two of hem are NEC machines (the 3500 series nd the 7700 series) and the third is the ujitsu. Each machine contains both serial nd parallel ports as well as special instruction sets that emulate the printing odes of other popular brands of printers. oth of these enhancements make it easier or users to interface the printer with the C and to utilize the printing commands nd features of applications programs.

The Sellum printers include a 16K uffer, which holds the equivalent of ten ages of double-spaced text. (The standard printer buffer is much smaller, usually 256 characters.) The large buffer can llow printing to continue while the computer is working on another task, and it revents the delays or lost data that can ccur when a small buffer overflows. Several other manufacturers offer separate rinter buffers, either as external units or s boards that may be installed in the rinter or computer.

Choosing an LQP

You can begin to assess your own requirements for a printer. Consider the following criteria when choosing an LQP.

• The tasks your printer must perform: efore you can choose hardware or software effectively, you should have a clear

QUIKCALC™
the calc accessory



REAL ESTATE INVESTOR

Wondering *"What if . . ."*?

Stop wondering. The versatile QUIKCALC REAL ESTATE INVESTOR analyzes any property. Why spend days analyzing a potential investment when the Real Estate Investor can do the work for you in minutes? This investment compounds its rate of return each time you use it!

- Loan Amortization Schedule
- Before and After Tax Cash Flows
- Depreciation (including new ACRS option)
- Conventional, Balloon, and Variable Rate Mortgages
- Professionally Designed Reports
- In-depth, Fully Integrated Analysis
- Summarized into Comprehensive, Internal Rate of Return
- Easy-to-follow, 100 Page Reference Manual
- Flexible, Easy-to-use, Worksheet Approach

$129.95

Runs on IBM-PC • Xerox 820 • Apple II & III • 8" CP/M Systems

Ask for it at

ComputerLand® Sears BUSINESS SYSTEMS CENTERS

The Xerox Store®

simple soft™

Simple Soft, Inc., 480 Eagle Dr., Suite 101, Elk Grove, IL 60007, (312) 364-0752

QUIKCALC and Simple Soft are trademarks of Simple Soft, Inc. Computerland is a TM of Computerland Stores, Inc. Xerox and Xerox 820 are trademarks of Xerox Corporation.

©1982 Simple Soft, Inc.

idea of the jobs for which you will use the computer system. If you already have a computer and are adding or replacing a printer, you probably know why you need this equipment. But you should also try to calculate the volume of printing the LQP will be doing, as well as any special printing features needed for your work. Determine whether a low-cost model or a more sophisticated and higher-priced machine is appropriate.

• The interface/compatibility factor: Obviously any LQP you consider should be capable of working compatibly with the PC. Before purchasing one, you should see it in operation. If you plan to use the printer with complex programs, such as a word processor, it would be wise to see a demonstration of the printer and the program in action together.

One way to minimize any interfacing problems is to purchase the entire system, including an LQP, from one dealer and to get that dealer's assurance that the printer will function properly with the programs you intend to use. You may not want to buy everything in one place, however, or you may choose a printer not sold by an IBM dealer; in this instance, try to get the printer dealer's guarantee that the machine can be interfaced to the PC or that you can return the machine if it is not satisfactory. If the prospective printer dealer is in your local area, you might even insist that you be allowed to bring in your PC for a working demonstration of the printer with your hardware and software before buying.

WHATEVER the advertised speed of an LQP, the real issue is the machine's production of printed pages.

• Speed: Once you've narrowed you search to LQPs that will interface with th PC and you know the jobs for which you' be using the printer, speed should be th next criterion. If possible, compare actua printing speeds rather than advertised te results. A performance test will help na row the field of candidates, but don't mak the final choice based on speed alone.

• Reliability and service: Before se tling on one printer, investigate the rel ability and frequency of service of severa models that provide the speed and fea tures your work requires. For example, you are considering three different LQF that have similar speed and price range the deciding factor could be the frequenc of breakdown or percentage of down tim for each one. Although this information i not widely published, you can get a rea sonable idea of various machines' reliabi ity by asking the technicians at the dealer where you shop, polling everyone yo know who uses an LQP, and even phonin the offices of printer manufacturers.

Find out the manufacturers' servic

User Guide to Printers

A baker's dozen LQPs to interface with your IBM PCs.

This guide is for PC users and prospective owners who want to add letter quality printers to their systems. Each of these LQPs has been successfully interfaced with the PC. In addition to the chart, three PC owners have contributed mini reviews of their own printers.

NEC 3550
NEC Information Systems
5 Militia Dr.
Lexington, MA 02173
(617) 862-3120
List Price: $2,350

Smith-Corona UltraSonic
Albany Typewriter & Computer
923 San Pablo Ave.
Albany, CA 94706
(415) 526-1959
List Price: $579

SuperCord Interface
Cord Limited
1548 Brookhollow Dr.
Santa Ana, CA 92705
(714) 751-3587
List Price: $395

ComRiter CR-1C Daisy Wheel Printer
Comrex International Inc.
3701 Skypark Dr. #120
Torrance, CA 90505
(213) 373-0280
List Price: $1,115

NEC 3550

Ads for the NEC 3550 state that this printer and the PC were "made for each other." With high hopes, I plugged a 3550 into my PC's parallel port (on the monochrome display adapter/printer card).

The 3550 differs from other Spinwriters in that the dominant top cover is supposed to match the recessive, putty-colored surfaces of the PC's cabinet. Unfortunately, the NEC paint mixer put too much green in the batch, so the matching effect is lost.

The other apparent difference is the control panel, which on the 3550 has a minimum of switches and push buttons. All machine fault signals are directed to one flashing light; you have to inspect the printer to see the problem. Other Spinwriters have a warning light for each.

Getting the 3550 going with *EasyWriter* 1.0 required reconfiguring program disks. I played with printer options to see if Type 2 ("Spinwriter type printer") or others would work. Some did, but with erratic results. The IBM Printer option seemed to work best.

My first try at printing a document revealed a well-hidden feature of the 3550: a 2K buffer. While the buffer is handy in dumping a Print Screen into the buffer while you go on to your next task, it's a nuisance if you want to stop or pause print The signal from the keyboard is at the end of the buffer, and the printer continues for 2,000 bytes until the buffer empties.

I prefer instantaneous control over printing, so I wanted to disengage the buffer. I searched through the documentation and came upon a chart of three DIP switches. This is the only place in the IBM binder-size manual that mentions the ex

(continued on page 170

Slaying Monsters Should Be Mostly Fun and Games



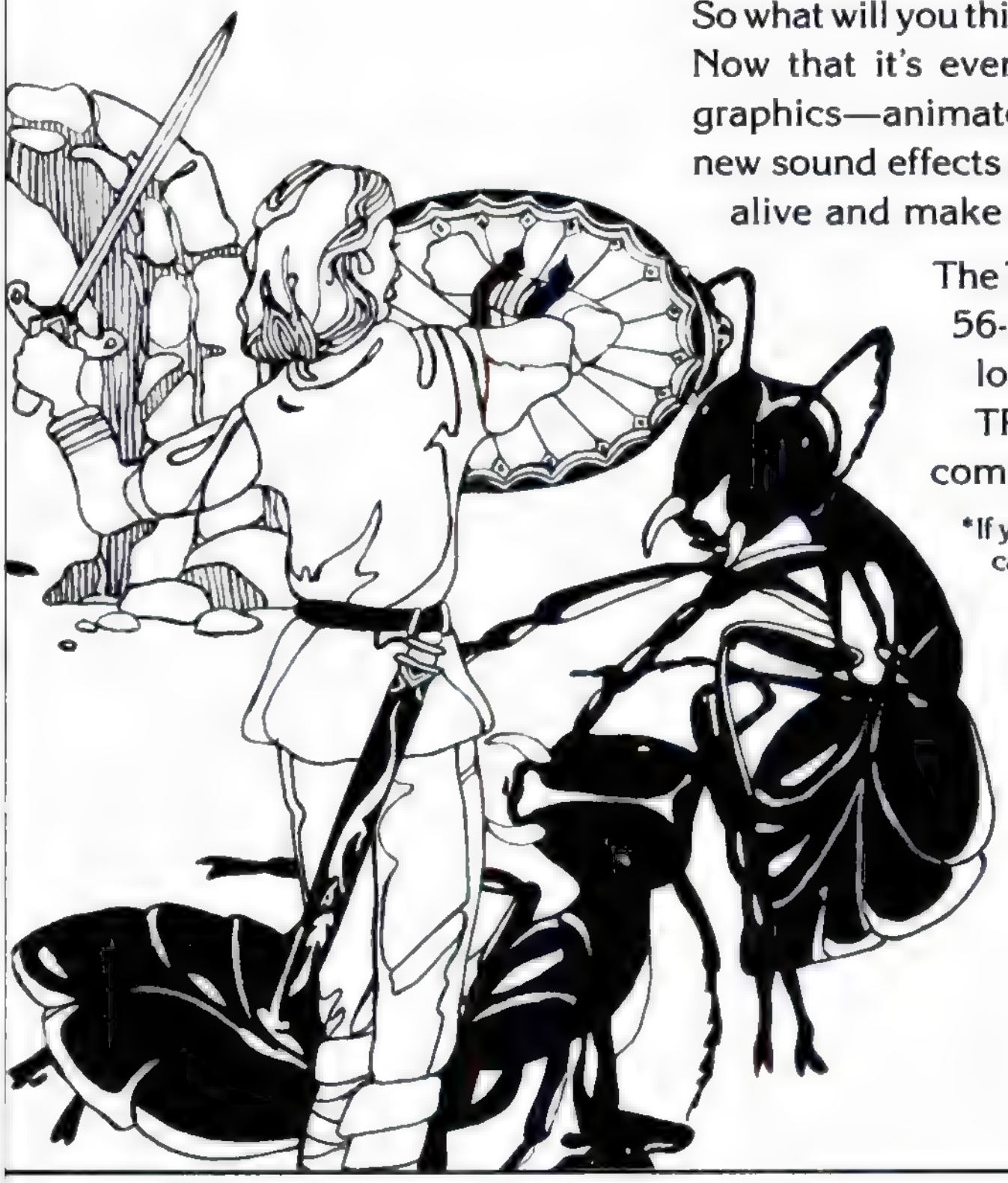
Be one of more than 16 million alter-egos that your computer can generate. Walk into a labyrinth filled with traps, treasures and monsters. There you'll test your strength, constitution, dexterity, intelligence . . . against thousands of monsters in over 200 caverns and chambers—growing in wealth, power and experience as you progress through the four levels of the dungeon.

Your character will do whatever you want him to do. Do battle—in real time—with the likes of giant ants, ghouls, zombies...Explore the various levels of the maze and discover the great treasures within.

The Game Manufacturer's Association named The Temple of Apshai the computer game of the year. The Temple is the very first computer game—ever to win the Hobby Industry award for excellence. There can be only one reason for that: it's a great game.

So what will you think of The Temple of Apshai now? Now that it's even better than ever. With better graphics—animated movement—and completely new sound effects that make your computer come alive and make The Temple even more fun.*

An EPYX game from Automated Simulations



The Temple has a superbly illustrated 56-page Book of Lore, and your local dealer has it for the ATARI,** TRS-80,** APPLE,** and IBM** computers.

*If you already have The Temple of Apshai, you can enjoy these great improvements. Just send us your original cassette or disk together with your check for $5.00 and we'll send you the brand new version—with better-than-ever graphics and sound.

**ATARI, TRS-80, APPLE and IBM are trademarks of Atari, Inc., Tandy Corp., Apple Computer, Inc., and IBM, respectively.

©1981, **AUTOMATED SIMULATIONS, INC.,** P.O. Box 4247, Mountain View, Ca., 94040.

EPYX COMPUTER GAMES THINKERS PLAY

(continued from page 168)

istence of the buffer. The trick, however, was how to get to the switches, which are buried well inside the printer in a hard-to-reach spot on the main circuit board. Why have switches if you have to take the whole printer apart to get to them?

The only other problem I am still having is making the 3550 print bidirectionally and perform special modes while double-spacing. For single spacing the printer performs special modes such as shadow printing and underscoring.

The overall print quality of the 3550 is very professional. About the only things it won't do for *EasyWriter* 1.0 are super- and subscripts even though the printer is capable of these tricks.

If the PC and 3550 were "made for each other," their relationship may be in for some rocky times amid the vagaries of new software coming down the line.

—*Danny Goodman*

I BECAME the first on my block to plug a 3550 into my trusty PC's parallel port.

UltraSonic/SuperCord

Computer technology has found its way into the typewriter market. Companies including Adler, Royal, Brother, Olympia, Olivetti, and Smith-Corona, are making typewriters that use electronic switching and daisy wheel printheads. Earlier electric typewriters use electromechanical switches and printheads. A by-product of this technology is a typewriter-computer printer combination. The machines are rarely sold as computer printers, but companies have developed interfaces that allow the typewriters to moonlight as computer printers.

The Smith-Corona UltraSonic is one of the least expensive of the computer-compatible electronic typewriters. The typewriter retails for $579, but to be used as a printer it requires the SuperCord interface ($395). Albany Typewriter and Computer sells the UltraSonic with the SuperCord installed for $795 (walk-in or mail-order).

As a typewriter the UltraSonic has programmable tab and margin settings, a 10-character corrector memory (using lift-off tape) and an express backspace. It comes with a molded carrying case and is billed as an electronic portable typewriter.

Snap-in ribbons are available in carbon film, correctable, and reusable nylon, and ten interchangeable daisy wheels are available. Unlike more expensive dual-pitch machines, the UltraSonic comes with either pica or elite type, but not both.

If you don't buy the system with the SuperCord installed, you will have to lift off the rubber platen to expose a chip on the machine's electronics board. You pull out the chip, plug one end of the SuperCord into the chip's socket, and reinstall the chip on the back of the SuperCord's plug. This takes about a half-hour, and you have to be careful not to damage the chip.

The UltraSonic/SuperCord system works. I used it to list some programs and to print *WordStar* and *Volkswriter* files. It printed the files beautifully, but would not support any of *WordStar*'s special features, such as underlining, double-strike, or sub- or superscripting. I didn't expect the UltraSonic to perform sub- or superscripting (that requires a relatively advanced feature), but I had hoped that it could implement *WordStar*'s simple method for underlining and double-striking. *WordStar* implements double-strike (a similar effect to boldface) by overstriking the characters when it reaches the material to be emphasized.

I had seen a demonstration in which the UltraSonic/SuperCord produced these effects using *WordStar* on an Osborne portable computer, but that required a special software patch, provided with the Osborne version of the SuperCord. The SuperCord people report that they are working on a similar patch for the IBM *WordStar*.

The major drawback to this and all typewriter-printer combinations is the slow printing speed. Using a program developed by *PC* to test "throughput," I found that it took 7 minutes, 16 seconds to print 50 lines of text (each line 70 characters long. See "The *PC* Speed Test for Printers," for the results from the same test of other printers).

Although the UltraSonic should be capable of typing thousands of pages without breaking down, one wonders about the constant pounding and extra speed of

(continued on page 172)

policies and procedures before purchas ing a printer. Most manufacturers offer 90-day warranty on both parts and labor a well as extended warranties and servic contracts. It's also good to know whethe your dealer will repair the machine (dur ing and after the warranty period) or sen

IF YOU CAN stretch your budget at all, it would be wise to buy a printer that is faster than you presently think you'll ever need.

it to an out-of-town service facility. I some instances, the manufacturer speci fies that printer repairs must be done a such facilities, which could mean a lon delay in getting the printer back to wor even if you don't have to pay for parts labor, or freight. You may be able to ar range with the dealer to use a substitut printer (perhaps on his premises) if you have work that can't wait; consider writin such a provision into a service contract.

• Special printing features: Althoug such features as microspacing and justifi cation may be highly desirable for you printing jobs, they are less important tha having a printer that interfaces easily wit your computer and software, and tha functions reliably. If you are considerin LQPs that have special features, howeve try to arrange a demonstration of them with both the PC and the programs you plan to use.

• Price: Often price is the first concern in a major purchase such as an LQP, but i shouldn't force you to compromise on th performance that you require to do busi ness. The prices of most LQPs fit into one of two categories—the $750 to $1,200 range and the $1,900 to $3,600 range. Your overa all budget limitations will probably dictat from which of these categories you select but your choice within that range should take into account the preceding criteria as well as price. You may find a 35 cps printer attractive because it costs $400 less than a

ANNOUNCING!

ISAM 300

—FEATURES—

FUNCTION

• Get and Put to Disk File by "KEY" • Read File Forward or Backward in Key sequence without sorting • Delete Record with automatic space recovery • Add Records to File in any sequence • Get Absolute Record Number • Skip Sequential Forward or Backward • Unlimited Secondary Key support • Update existing records • Empty a File with out Recreate •

USAGE:

LANGUAGES
- BASIC
- COMPILED BASIC
- PASCAL
- MACHINE LANGUAGE
- C
- FORTRAN

OPERATING SYSTEMS
- PC-DOS
- CPM
- CPM 86
- TRSDOS MODEL II
- TRSDOS MODEL I/III

ARCHITECTURE

Dynamic file size
Adjustable main memory vs performance
Single file contains both index and data
for up to 8 megabyte ISAM files
— or —
Index existing direct files
with access for 16 million records
Up to 8 ISAM files open at one time
Duplicate Keys may be allowed or disallowed
Independent partition of memory

PRODUCT LINE

INFORET	$ 35.00
DATAENTR 200	$ 80.00
ISAM 100	$ 90.00
ISAM 200	$140.00
ISAM 300	$190.00

JOHNSON ASSOCIATES SOFTWARE

(916) 221-0740 P.O. BOX 3069
REDDING, CA 96049

(continued from page 170)

computer printing. I raised this question with a representative of Smith-Corona, who said that the UltraSonic is neither designed nor warrantied for such use. However, he knows of very few problems stemming from the machine's use as a printer. He also mentioned that the UltraSonic is mechanically and electronically similar to the Smith Corona TP-1 printer.

If you expect to use your letter quality printer frequently, this is not the machine to buy. You are likely to be frustrated by its slow speed and disappointed by its spartan features. You're also likely to wear out the typewriter prematurely. On the other hand, if you have an occasional need for letter quality and are willing to wait 3 to 5 minutes for the machine to print out a one-page business letter, then this could be your low-cost and versatile alternative. You will enjoy letter-perfect copy and a portable electronic typewriter for less than the cost of a letter quality printer.

— *Lawrence J. Magid*

ComRiter

I wanted a letter quality printer that could handle routine professional and personal correspondence, moderately lengthy reports, and other word processing applications. Budgetary considerations were important, and I was willing to trade printing speed for a considerable savings in total dollars spent.

I purchased a Comrex CR-1C ComRiter, a printer manufactured in Japan (and identical in every way but the front panel name to the Brother HR-1). It is an operationally simple, microprocessor-controlled impact printer that uses daisy wheel technology.

The ComRiter produces copy identical to an electric typewriter's at a rate of about 200 wpm or 16 cps (Shannon test, pica pitch). It can use a parallel interface and be cabled directly to the IBM PC printer port using the standard IBM printer cable. In this fashion it operates as a system printer and is able to respond to the IBM Print-Screen key. Printing is bidirectional, and the machine can handle paper up to 16.5 inches wide. It appears to be sturdy and runs reasonably quietly because the printing noise is muffled by an effective acoustic cover.

Conveniently located on the front panel is a line spacing switch that offers single-, double-, or 1½ spacing. Just beneath this is a switch for selecting three alternative pitches: pica (10 pitch, 132 characters per line), elite (12 pitch, 158 characters per line), or 15 pitch (198 characters per line). This is a feature that one does not expect to find on a letter quality printer in this price category.

The power switch is placed on the left side of the printer where it is easily accessible but not likely to be accidentally switched off. A red light on the front panel and a high-frequency tone function as an alarm to indicate when more paper should be added or when a new ribbon is needed.

Paper loads smoothly and either single-sheet or continuous-feed paper can be used. One feature that is noticeably lacking is a tractor feed to maintain correct tracking of continuous-feed paper; this renders the printer incapable of doing a large volume of unattended work. Even without a tractor feed the printer does surprisingly well. Because the paper fits snugly against the platen, there is minimal slippage in printing the first six to eight pages of copy.

I have used the printer with a variety of programs, including *VisiCalc*, *WordStar*, and *Volkswriter*. *WordStar*, with its wide range of features, provides an excellent test for any printer. The ComRiter is able to follow most *WordStar* commands, including underline and boldface, but it does not take advantage of the *WordStar* microspacing feature, nor can it print subscript or superscript. Like other daisy wheel printers, this machine lacks graphics capabilities.

Both the ribbon and the daisy wheel may be changed with minimal fuss, as they are in self-contained cassettes. The daisy wheel cassettes provide a wide range of character style and pitch possibilities. The Comrex uses IBM Selectric type ribbon cassettes, making replacements easily obtainable.

Overall, the ComRiter is an easy-to-use, straightforward printer that provides an economical way to get quality copy. It is not a speed demon, nor does it support every feature one might require, but it costs half the price of a printer in that category. This printer could not be the workhorse of an office with high-volume word processing needs, but for lighter office or home use it is a good choice. It puts letter quality printing into an affordable price range and makes an ideal companion to an IBM PC.

— *Stuart R. Schwartz*

similar 32 cps model, for example, but the faster machine does not have a proven record of reliability and service when compared with the slower model, the faster printer may not be the better buy.

If you've read the advertisements

THE MORE sophisticated a program's printing features, the more detailed its operating and installation instructions must be.

even one issue of a computer magazine you know that mail-order suppliers sell printers at a considerable discount off the typical prices charged by walk-in dealers. Because of the special needs of interfacing LQPs to the PC and its software, as well as the availability of service, however, weigh the savings involved against the potential for frustration, lost time, and extra service costs that could result from buying a machine without knowing the dealer. In certain instances a mail-order purchase may be your only way to afford an LQP with the speed and features you need, but be sure to find out the warranty and service procedures in advance, and check with other computer users to determine which mail-order dealers are most dependable. (This advice also applies to walk-in dealers; just because you pay the full price doesn't guarantee good support and service.)

• Ask around: Ask everyone you know in the computing world about specific makes and models of printers, local dealers and mail-order suppliers, and any problems or issues specific to the PC and printers. You're likely to get a Pandora's box of replies, but some of the feedback could alert you to good and bad suppliers or equipment. If you find that a number of users agree on certain facts, such as one printer's reliability or another machine's balkiness, your poll will have been an effective tool. When you match this knowledge with your own research and criteria, your final selection of a letter quality printer should be simple. /PC

For the IBM*-PC *Exclusively*

PC SPECIALS

PEACHTREE SOFTWARE
Peachpak Series 4
al Ledger, Accounts Receivable, and Accounts Payable
an alternative to the BPI product offered by IBM
$387 00
through November 30th

AST RESEARCH
ComboPlus Card with NEW Superdrive
(allows you to designate a portion of memory as "disk")
with serial and parallel ports, and clock/calendar
full one year warranty
64K (upgradable)
$389 00
through December 15th

SOFTWARE

—Word Processing—

Soft	WORD/PC	49 00
ost	Write-On	97 00
e	volkswriter	147 00
t Software	Perfect Writer	233 00
	EasyWriter II	259 00
n	SuperWriter	277 00
n Porter	Powertext	399 00

—Data Base—

ware	CREATABASE	49 50
rp	VisiDex	189 00
	VisiFile	229 00
r	Condor Series 20-1	227 00
	Condor Series 20-2	427 00
	Condor Series 20-3	687 00
Software	Data Base Manager	245 00
	EasyFiler	299 00
Lab	Data Factory	374 00
n Tate	dBase II (DOS or CP/M-86)	478 00

—Spread Sheet—

hare Target	PlannerCalc	69 95
	EasyPlanner	141 00
rp	VisiCalc	189 00
n	SuperCalc	209 00

—Other—

Software	Mailing List	95.00
	Type Faces	95 00
	The Apple—IBM Connection	175 00
	Epson to Prism *makes Prism Printer look like Epson*	49 95
	The Real Estate Consultant	195 00
ental	Home Accountant Plus	112 00
	First Class Mail	94 00
on	The Speed Reader	55 00
lySoft	FriendlyWare	49 95
	Graphmagic (compiled)	67 00
	Mathemagic (compiled)	75 00
	EasySpeller	135 00
Lab	Tax Manager	187 00
stuf	Crosstalk	139 00
	Transporter	227 00
tware	PCcrayon	44 95
data	Softspool *parallel print spooler*	49 95
	Keyswap *transforms PC keyboard into typewriter style keyboard*	69 95
n (ISA)	Spellguard	209 00
on Software	PCModem 1 3 *for Smartmodem 300*	49 95
	PCModem 1 4 *for Smartmodem 1200*	79 95
oft	Versatext	125 00
rp	Desktop/PLAN	229 00
	VisiTrend/Plot	229 00
	VisiSchedule	229 00

GAMES

Software	Question *(educational)*	45 00
ated Simulations	Temple of Apshai	29 00
	Upper Reaches of Apshai	15 00
	Curse of Ra	15 00
Giant	Hoser *(sweaty palms guaranteed)*	25 00
ost	Pig Pen *(power pills)*	23 00
	Space Strike *(exciting invasion game)*	27 00
	Prism — A Storydisk *(win 3 keys worth $40,000)*	19 00
m	Zork I	29 00
	Zork II	29 00
	Zork III	29 00
	Starcross	29 00
	Deadline *(our best seller)*	39 00
	Space Guardian	23 00
ne	Frogger	27 00
tware	Championship Blackjack *(learn to be a winner!)*	34 95
	Call to Arms *(Conquest)*	23 00
	Space Eggs	23 00
gic Simulations	Warp Factor	29 00
oft	Queen of Hearts *(joystick or keyboard maze)*	29 00
	Blackjack	31 00

HARDWARE

—Memory—

Microsoft	RAMCard *(with RAMDrive & Utility)* 64K (upgradable)	257 00
AST Research	ComboPlus Card with NEW SuperDrive (S/P/C) 64K (upgradable)	389 00
Quadram	Quadboard *with serial and parallel ports, and clock/calender* 64K (upgradable)	428 00
	64K upgrade chips for any of above (9 chips)	78 00

—Printers—

Epson	MX-80 F/T with GRAFTRAX-Plus	497 00
	MX-100 F/T with GRAFTRAX-Plus	697 00
Smith Corona	TP-1 letter quality	644 00
IDS	Prism 80 with all 4 options	1297 00
	Prism 132 with all 4 options	1578 00
CompuCable	Cable for any of above to IBM-PC	32 00

—Monitors—

Electrohome	1302-2 RGB Hi Res Monitor	Call
	Cable for above (16 color) to IBM-PC	46.00
Amdek	Color II RGB Hi Res Monitor	697 00

—Other—

Amdek	Amdisk 3" Microfloppy	697 00
	Amplot Digital XY Plotter	727 00
Curtis	PC Pedestal for IBM Display	77 00
	Extension Cables for IBM Display	44 00
	Keyboard Extension Cable (3 to 9 ft.)	36 00
FTG Data	Light Pen	139 95
	Demo/Games Diskette for Light Pen	29 95
Hayes	Smartmodem 300	227 00
	Smartmodem 1200	557.00
	PCModem Software 1.3 for Smartmodem 300	*49.95*
	PCModem Software 1.4 for Smartmodem 1200	*79 95*
	Smartmodem-to-PC Cable	*30 00*
Kraft	Joystick	51 00
	Paddle	37 00
Computer-Mate	Computer-Mate Desk 4 ft	346 00
	Computer-Mate Desk 5 ft	421 00
Symtec	Light Pen *with demo diskette*	126 00
TG	Joystick	51 00
	"Y" Cable for 2 Joysticks	39 00
Tandon	TM 100-2 5¼" Drive (DS, DD)	Call

FOR MORE INFORMATION
1-603-446-3383

Monday through Friday 9:00 to 5:30
or write
PC Connection, 6 Mill Street, Marlow, NH 03456

TO PLACE ORDERS
1-800-243-8088

No surcharge added on VISA and Mastercard
No additional charge for insurance, we fully insure all shipments
No sales tax
Allow 1 week to clear personal and company checks

SHIPPING

United States
For monitors, printers, and furniture, add 2% to all orders. For all other items, add $2 per order for UPS surface, $3 per order for UPS Blue Label

Canada and Mexico
We add freight charges to credit card purchases. For prepayment, include 3% for monitors, printers, and furniture. For all other items, add $4 per order for shipping charges

Outside The US, Canada, and Mexico
We add freight charges to credit card purchases. If you would like to prepay, call 1-603-446-3383, or write for shipping information

All items subject to availability. Prices subject to change without notice.
*IBM is a registered trademark of International Business Machines

DATA CAPTURE™/pc

The most advanced and easiest to use telecommunications program for use with the IBM® Personal Computer.

Software designed with you in mind



It helps you do all this . . . SO EASILY!

If you use your IBM Personal Computer to communicate wi other microcomputers or timesharing systems, then yo need **DATA CAPTURE™/pc.**

Specifically designed to take advantage of all the powe and capability of your IBM Personal Computer but doe not require you to be a computer expert to use it!

The version of **DATA CAPTURE** for the Apple was selected as number one in its catego and number thirty-one overall in Softalk magazine reader po (April 1982).

master charge VISA

See your dealer today for a demonstration of **DATA CAPTURE™/pc** or order direct from Southeastern Software.

Price $120.00

DATA CAPTURE™ is a Trademark of Southeastern Software
IBM® International Business Machine
Apple II® Trademark of Apple Computer Company

SOFTWARE DESIGNED WITH YOU IN MIND

Southeastern Software

7743 Briarwood Drive • New Orleans, Louisiana 70128 • 504/246-7937 or 504/246-8438 • TCV989

The PC's Keys

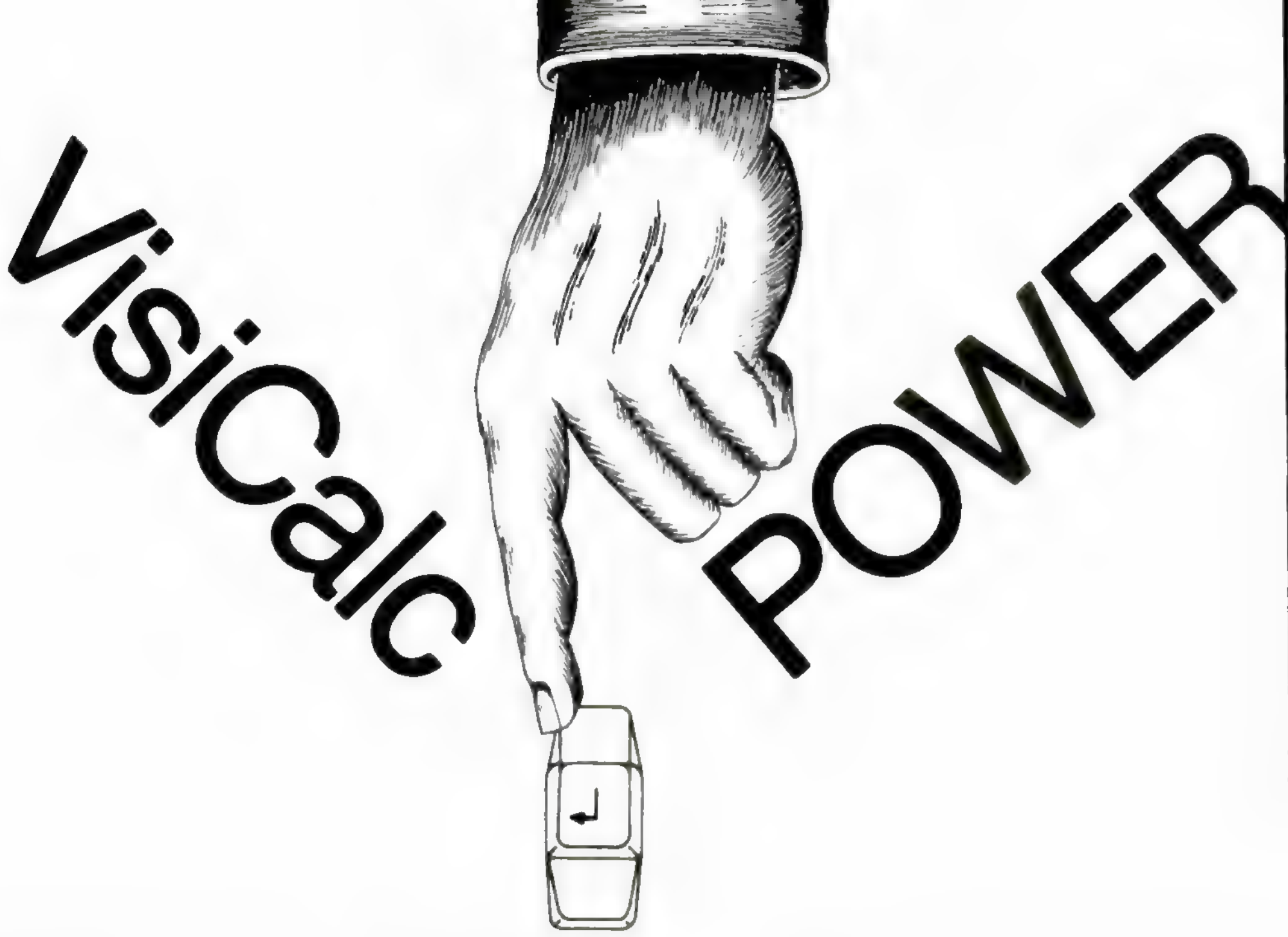
Though no one's complaining about the sleek, slim look of the PC keyboard, seasoned users say it looks better than it works.



sculpturally stylish keyboard of the 1 Personal Computer is like a dream or guy you fall for at first sight. When a tionship ensues, you may find the im image marred by flaws that cannot e in the cruel light of daily intimacy. The PC's keyboard is all sleek curves, a profile dressed in fashionable shades. build is solid, and the keys move and pond to your fingers like a good dance tner. So it is disillusioning when you get familiar enough to discover that the left shift key is in the wrong place. Further familiarity brings more of the same. The keyboard design has a discouraging number of pickable nits.

Eighty-three keys on the slender panel connect via a coiled cord to the PC's main cabinet. Their names are a mix of those commonly seen on typewriters and those found on computers only. Some, like the group of ten changeable-purpose keys at the far left, are a sort found on newer computer keyboards only. A few of the key names seem invented for this machine.

One shortcoming crops up with the three lock keys—NumLock, ScrollLock, and CapsLock. There is no visual or tactile indication of whether any of the locks are on or off. (The Ctrl-PrtSc key combination, which could be called PrintLock, has a similar problem.) The frequent result is typing numbers when cursor motion is in-



We Made VisiCalc™ Smarter!

World's First
AUTOMATIC VISICALC TEMPLATE GENERATOR

The **BUSINESS PLANNING TOOL** is the most significant development in software since VisiCalc. Now, even the first-time user can generate sophisticated spreadsheets for planning and analysis of Profit/Loss, Balance Sheet and Cash Flow Statements. The process takes just minutes instead of hours.

Seasonal trends and sophisticated interrelations are handled with ease through user-friendly manipulation of screen graphics.

The **PEACHTREE CONNECTION** allows direct extraction from Peachtree Data files to a VisiCalc model. General Ledger data files are read automatically to instantly create a series of complex, interactive VisiCalc models complete with Key Financial Ratios.

We take the Work out of Working with VisiCalc.

VisiCalc Real Estate Templates
PROPERTY/INVESTMENT ANALYSIS TEMPLATES

A versatile problem solving package for business executiv
developers, brokers, accountants, attorneys, and real est
analysts of all kinds. It combines the power and flexibility
VisiCalc with the simplicity of a menu driven program.

- Amortization System
- Income Property Investment Analysis
- Internal Rate of Return
- A.C.R.S. Depreciation
- Comparative Depreciation
- Mortgage Loan Analysis
- Personal Financial Statement

"I am very pleased that the response to your VisiCalc Real Estate Templates has been so positive. We have reviewed your product internally and do think it is quite a good product."

—Richard Melmon,
DIRECTOR OF PRODUCT MARKETING
PERSONAL SOFTWARE INC

At ComputerLand and other stores. Ask for a demonstratio

VisiCalc Real Estate Templates	$120.
Business Planning Tool:	$150.
Peachtree Connection:	$ 75.

Requirements: IBM Personal Computer with 64K RAM, one d
drive (single or double sided), 80 column display, prin
VisiCalc program.

Sofstar

13935 U.S. 1, Juno Square,
Juno Beach, Florida 33408
(305) 627-5511

Sofstar is a trademark of Sofstar, Inc VisiCalc is a trademark of Visi

nded, or vice versa, and similar annoy-nces with the other locks. More mail has en addressed to *PC's Wish List* column this topic than on any other. Ironically, e fault is a by-product of an IBM design rategy intended to give programmers aximum flexibility with the keys.

The keyboard sends the computer no formation other than that a given key lentified by number according to its po-ion on the board) has been pressed or leased. All interpretations of what the y means—whether it is a capital "A," an arrow, or a command to delete—are one by software at the computer's end of e coil cord, and programmers can hange this software if they wish. Even the ift key and its cousins, Ctrl and Alt, do o actual shifting. The software calculates at if the shift key has been pressed but ot released when the "A" key is pressed, hen capital "A" is what's wanted (assum-ng the CapsLock key has been pressed

THE ENTER key is far more difficult to hit on a PC than the equivalent return key on a Selectric.

nd released an even number of times ince the computer was last restarted). oftware control of the lock keys makes roviding a physical indication of their tatus more difficult, though not impossi-le. Hopefully, someone will devise a so-ution soon.

Numeric Keypad

Most probably, IBM kept down the umber of PC keys to avoid scaring those who are intimidated by complex-looking achinery. But the double-duty arrange-ment that has the right-hand group of keys serving for both number entry and cursor control was a false economy. Spreadsheet program users who have frequent need for both types of keys groan loudly over the need to switch key functions back and forth. For comparison, consider the Victor computer, a product aimed at a similar market and released at about the same time as the PC. Its arrangement of more than 100 keys includes both a cursor group and a number group, yet it seems hardly more complex than the PC's 83-key setup.

Perhaps the appearance of complexity could have been reduced if there were two key groups on the right—one for numbers and one for the cursor—separated by a band of space like that used to separate the function keys on the left.

Other nits about the number keys include the awkward leftward offset of the zero key, the lack of a double-zero, the lack of a divide key to go with the plus and minus keys, and the disguise of the multiply key, which is camouflaged by both its position and nonstandard legend. (It uses the programmer's "*" symbol for multiplication, rather than the adding machine's customary "x" symbol.)

Symbolic Legends

Many function keys are marked with international-type graphic symbols instead of plain words. Shift keys, for example, are identified by fat, upward-pointing arrows. The symbols are nonintuitive, particularly the one for the tab key, and demand unnecessary thought to sort them out. Lack of a labeled return or enter key causes instruction manual writers to complain.

Another confusion arises with the delete/backspace key and the cursor-left key; they have nearly the same picture but significantly different functions. Since some keys have printed names or abbreviations instead of symbols, the partial use of symbols seems to have more to do with trendy appearance than functionality.

Key Arrangements

While other manufacturers of new personal computers are slavishly imitating the keyboard standard IBM set with its Selectric typewriter, IBM itself is moving away from it. Not only is one shift key awkwardly far left, but both are small, while the seldom-used Alt key is a huge target. The enter key is far more difficult to hit on a PC than the equivalent return key on a Selectric. The extra characters of the computer

GO FOR IT!

Ok, football fans, now you can play a hard-charging game right on your own green turf. A game where you're the coach . . . you're the quarterback . . . you're the whole damn team! You call every play . . . want to go for it? . . . or punt?

The opposition is tough. Your wiley IBM Personal Computer, figuring odds on each play . . . determined to win at all cost.

Sounds like fun? You bet. And its available **now** for you to play on either green turf or graphics. Football requires one drive, 64K memory, and your game plan.

To order, send $15 + $2.50 shipping/handling to: Computerenergy Corporation, PO Box 6267, Denver, CO 80206, and we'll send you a great game of football. We'll refund the fifteen bucks if you aren't completely satisfied, so why not go for it?



computerenergy
po box 6267 denver, colorado 80206
(303) 233-9118

character set, such as the backslash and vertical bar, seem randomly located.

Many critics have noted that IBM might better have arranged the function keys in one horizontal row to match video labels across the bottom of the screen. Assuming IBM had a good reason for having them in vertical rows, it still might have been better to number the keys in two rows from top to bottom—F1 to F5 on the left and F6 to F10 on the right. With the current arrangement, F4 through F8 seem difficult to locate without deliberately searching for them.

THE IBM'S click sounds nice.

The ScrollLock key is placed as if it would reverse the effect of NumLock, but it does not. As a matter of fact, ScrollLock has no present use; it has been provided for future use by programmers who want to make screenfuls of data scroll up, down, or sideways when the arrow keys are pressed while ScrollLock is in effect.

Physical Details

IBM provided retractable legs on the bottom of the keyboard to adjust its angle. Only two adjustments of the legs are usable, however—up and down. A wider range would have been preferable.

One prized feature in keyboard design is key click, a physical feedback that reassures the user a key has been pressed successfully. The IBM's click sounds nice but could provide more physical feedback to the fingers. Another frustration is caused by IBM's use of an unusual, spring-loaded key design to provide key click: The keycaps are not replaceable by industry-standard keycaps.

Serious Omissions

One troublesome omission is a typewriter-style shift lock, one that is released by the next press of the shift key. For an one used to typewriters, the absence is pain, and the CapsLock key is no subst tute. One is tempted to speculate that thi along with the awkward shift and ente keys, is part of a deliberate IBM strategy discourage consideration of the compara tively inexpensive PC for serious wor processing use.

Perhaps the most galling omission of a is the lack of a true reset key. The three key combination Ctrl-Alt-Del will caus immediate cutoff of whatever program in progress and restart the computer as if were freshly turned on. More desirable a true reset that simply breaks the compu er out of a running program and places in a holding loop for further instructions without destroying whatever may be i memory. Since the PC reset is actually software function, the Ctrl-Alt-Del combi nation will not work if a program gets hun up at some stage at which the PC is no listening to keyboard input, such as durin disk access. In such cases the only work able alternative is to turn the power off

A true reset key would reset the com puter while running a BASIC program then issue further commands to return t BASIC without reloading it from disk. Th omission of a reset key may have been deliberate choice to frustrate unautho rized copying or examination of commer cial software. Using Ctrl-Alt-Del, if you stop operation of a program, you also auto matically wipe it out of memory. This would be a good idea if it encouraged the appearance of more and better software But many of those given to hard-core soft ware theft have the technical know-how to connect their own reset key. Less knowl edgeable users are stuck with wiping out their data whenever some glitch leaves their program lost in never-never land.

Software authors suffer the most: Pro grams are prone to getting hung up in end less loops during the development phase and they are forced to choose between a design that makes them work harder or dubious surgery on their machine.

In a recent speech to an industry gath ering, chief IBM scientist Lewis Brans comb said the PC's keyboard will become one of IBM's standard keyboards. It is al ready being used with different key defi nitions on IBM's Datamaster computer Before standardizing it, IBM would be well advised to make the keyboard live up to its good looks. */PC*



Where does it all go?



Maybe you should have a

Personal Computer/Personal Finance Program

- Performs all functions necessary for proper personal and small business money management
- Easy to use—no accounting or computer experience necessary
- Requires only a single entry for each financial transaction—and provides quick and easy error correction
- Allows you to add, delete, or change transactions easily, for any of the last twelve months
- Provides a variety of detailed printed reports to help you manage your finances

Requires IPM-PC with 64K, PC-DOS, 80 column display, 1 or 2 diskette drives, and a compatible printer

$95.00

- Name your own budget (6 income and 38 expense) categories
- Monitor credit card payment and debt
- Reconcile your bank statement using the on-the-screen form
- Sorts, tracks, and totals your annual tax-deductible items (nine different categories)
- Displays over 90 bar graphs, in black and white or color, of cash flow, budget performance, income or expense category trends, or checkbook balances.

BEST PROGRAMS

The Quality Software Company

P.O. Box 2370, Alexandria, VA 22301

703-549-3663

FREE INFORMATION

☐ Please send me more information about the PC/PFP.

☐ Please send me a copy of PC/PFP. I have enclosed a check or my MC/VISA account no. and exp. date

Name _____

Address _____

City _____

State _____ Zip _____

MC/VISA no. _____ Exp. _____

See your dealer or order direct. Send check, money order, or Visa/Mastercard number for $95.00 + $2.00 postage and handling to the address at left.



PRINTS LIKE A DAISY...COSTS LIKE A MATRIX.

Integral Data Systems introduces the only low-cost dot matrix printer on the market that features Maisey™ printing. Maisey printing is a technique that allows you to produce correspondence-quality text approaching that of more expensive daisy-wheel printers, but at much faster speeds.

How fast? With Microprism Printer's™ dual speed capability, you can output at 75cps in correspondence-quality and 110cps in high-speed data mode. And it also features sharp, high-density graphics in an 84 x 84 dpi format.

You'll get cleaner, crisper output than you ever thought possible in a single pass.

Other standard features of the Microprism include proportional spacing, text justification and, of course, software compatibility with our more expensive Prism Printer™ line.

The Microprism Printer is the perfect system mate that can handle all of your printing requirements... it's the best of both worlds. So if you've been waiting for the price of daisy-wheel printers to come down, or the quality of dot matrix to go up, now is the time to check out the exciting new Microprism Printer from Integral Data Systems.

Stop in at your local dealer today and ask for a demonstration. If you need the name of the dealer nearest you, call us toll-free at (800)258-1386. Or write Integral Data Systems, Milford, NH 03055.

MICROPRISM™

Integral Data Systems, Inc.

Microprism Printer, Prism Printer and Maisey are registered trademarks of Integral Data Systems, Milford, NH.

CP/M-86 And MS-DOS: A Comparative Analysis

As operating systems begin to take advantage of the PC – do the capabilities justify the necessary upgrade? Creating more pressure to choose the right system

MS-DOS 1.2 & 2.0
Microsoft
10700 Northup Way
Bellevue, WA 98004
(206) 828-8080
List Price: $240

CP/M-86, CCP/M-86
Digital Research
P.O. Box 579
Pacific Grove, CA 93950
(408) 649-3896
List Price: CP/M-86 $240; CCP/M-86 $350

Now that you have your IBM Personal Computer, which of the available operating systems should you run on it? The answer to this question depends on what you do with your PC: Are you a nontechnical user, an applications programmer, or a systems programmer? Each type of user has a different set of priorities to consider in selecting the optimum operating system.

If you are like most PC owners, you use your computer to run off-the-shelf applications programs such as word processing, spreadsheet, and communications packages. You may question the need for buying another operating system: Isn't the one supplied by IBM adequate for general use? The answer is a qualified yes; but due to the complex trade-offs among the various operating systems available for the PC, it pays to examine the factors involved before deciding whether to buy another operating system.

This article compares Microsoft's MS-DOS with the CP/M family of operating systems from Digital Research. The nature of operating systems makes this discussion technical. The nontechnical reader may want to skim the following analysis and read the sidebar and conclusion for an overview of the survey results.

CP/M-86

CP/M was invented in 1973 by Gary Kildall, the founder of Digital Research. At that time he was a software consultant for Intel Corporation. Intel wasn't interested in his fledgling operating system, so he took it to the microcomputer hobbyist groups that were then springing up in Silicon Valley. As a result of their interest and support, by 1975 a number of pioneering micro companies such as MITS and IMSAI were offering CP/M as their standard (and only) operating system. Powerful software development tools such as Microsoft BASIC became available soon afterward, and CP/M really began to take off. In sheer number of applications programs, compatible machines, and installations, CP/M-80, the direct 8-bit ancestor of

CP/M-86, is probably the most widely used microcomputer operating system in the world.

CP/M-86, the 16-bit version of CP/M, is a single-user, single-tasking operating system. It supports one operator console and runs only one program, or task, at a time.

The memory management features of CP/M-86 are superior to those of MS-DOS. Whereas the memory regions in MS-DOS can become "fragmented," or divided among many small programs, CP/M-86 allocates memory according to the size of the program. This insures that a program will always be able to load if there is enough unallocated space in RAM. With MS-DOS, fragmentation can prevent a large program from loading.

Program locking, stacking, and chaining are easier to implement under CP/M-86 than under MS-DOS, mainly because of the better uniformity and increased flexibility of CP/M-86's memory management software commands. Programs can be locked into memory so that they can be used by other transient programs to perform functions without being deleted when their task is finished. This feature is handy for implementing a background utility program such as a printer spooler. The user can load the printer spooler, load other software on top of it, and then call the spooler to output files to the printer while doing other tasks.

Programs running under CP/M-86 may load and execute other programs under their control (program stacking) as well as manage the available memory in the system at will. An example of the use of this feature is the dynamic debugging tool program, DDT-86, which loads and runs programs under its control so that they can be debugged. For example, to debug an assembly language program, the user would type DDT86. The DDT program will load and then prompt for a command. At this point the user can tell it to load the assembly language file. He or she can then look at selected memory locations, execute the program step by step, or modify its sequence of instructions.

In program chaining, a program that has finished its task can issue a command to load and run another program residing on disk. An example of this is an initialization routine that customizes a word processor to a particular system's hardware. After altering the word processor, the initialization routine starts the word processor and then terminates itself.

Program locking, stacking, and chaining are necessary features for the operation of complex software systems. CP/M facilitates program chaining with an operating system call, whereas in MS-DOS, applications programs have to carry out chaining themselves. This makes the development of software under MS-DOS more complex. Easier implementation of these functions under CP/M-86 means that applications programmers will be more inclined to write software for CP/M-86 than for MS-DOS.

The design of the CP/M-86 disk operating system is based on the assumption that users have disk hardware with a 128-byte data sector. Any deviation from this size requires that the system programmer write extensive blocking/deblocking routines into the input/output system. These routines adjust the way data is handled by CP/M-86 to the hardware sector size used by a specific computer. The lengthy calculations involved in these routines decrease disk performance. CP/M-86 has to read disk space allocation information from the disk directory each time the disk is accessed, a process that further degrades performance. However, as CP/M checks the space only at the beginning of a read or write, the performance difference between CP/M-86 and MS-DOS is proportionately less for long files. There is no appreciable difference in speed between the two systems when using a hard disk.

THE SIMPLER applications will probably flourish in the MS-DOS environment, while sophisticated packages will probably be written for CP/M.

However, CP/M-86 is significantly s
than MS-DOS on floppy-based syst

CP/M-86 is less efficient in its u
disk space than MS-DOS because it
cates disk space in blocks of 2K regar
of the actual amount of data. CP/M-
serves the first two tracks of a diskett
operating system software, whether c
a system disk is being used. These i
cient practices mean that MS-DOS
store more data than CP/M-86 or
same size diskette.

The greatest difference between
DOS and CP/M-86 is in error hand
CP/M-86's handling of physical dis
rors leaves a great deal to be desired;
is no provision for recovery from e
All you get is a cryptic error message,
as "BDOS ERR ON A: BAD SECT
the system hangs, and you have to rese
disk system and restart your program.
should be corrected in later versio
CP/M. One advantage is that up to 16
numbers can be assigned to files in
CP/M-86 directory, easing the imple
tation of complex file systems.

An area in which CP/M-86 uneq
cally outshines MS-DOS is in its I/C
vice handling. The CP/M-86 STAT
gram provides a convenient way to ch
device assignments. When a letter qu
serial-interface printer and a high-s
parallel-interface line printer are u
both printers can remain connecte
their respective interface connectors
change printers, the user types a comm
such as STAT LST:=LPT<CR>, and
operating system automatically s
printer output data to the new device.
plications programs have access to
same facility, but more directly thr
operating system function calls. Th
neither of these methods is very cle
the novice CP/M user, careful readi
the documentation will reveal the inc
tions required to do the trick.

Another CP/M advantage is the
phistication of its file transfer prog
Peripheral Interchange Program (PI
not only transfers files from any part o
system to any other, but also perfor
wide variety of useful functions. PIP
display the contents of the file on the
as it is being transferred, filter out f
feeds, translate uppercase character
lowercase or vice versa, add line num
to the destination file, concatenate f
expand tabs to any number of spaces,

COMPU-CART®

SECURELY TOGETHER — ERGONOMICALLY DESIGNED







PAT. PEND.



u have an I.B.M. computer from their largest to their smallest Personal Computer, we have ght workstation for you. The Compucart is the ergonomically designed, fully lockable, mobile puter/terminal workstation.

mpucart's ERGONOMIC design means that not only is the rd at the correct height for comfortable interactive entry, but ustable both horizontally (back and forth) and vertically to modate both the user and the hardware. The design further means keyboard, the work and the screen are all in your comfortable F SIGHT. The Compucart is engineered to minimize fatigue and ove the user-computer interface.

he Compucart offers SECURITY by returning the computer to the position when not in use or running unattended, the double walled door is closed and the whole workstation is secured with one lock. erminal user it means that you can comfortably step away from your hile you are logged on and access to your terminal is restricted.

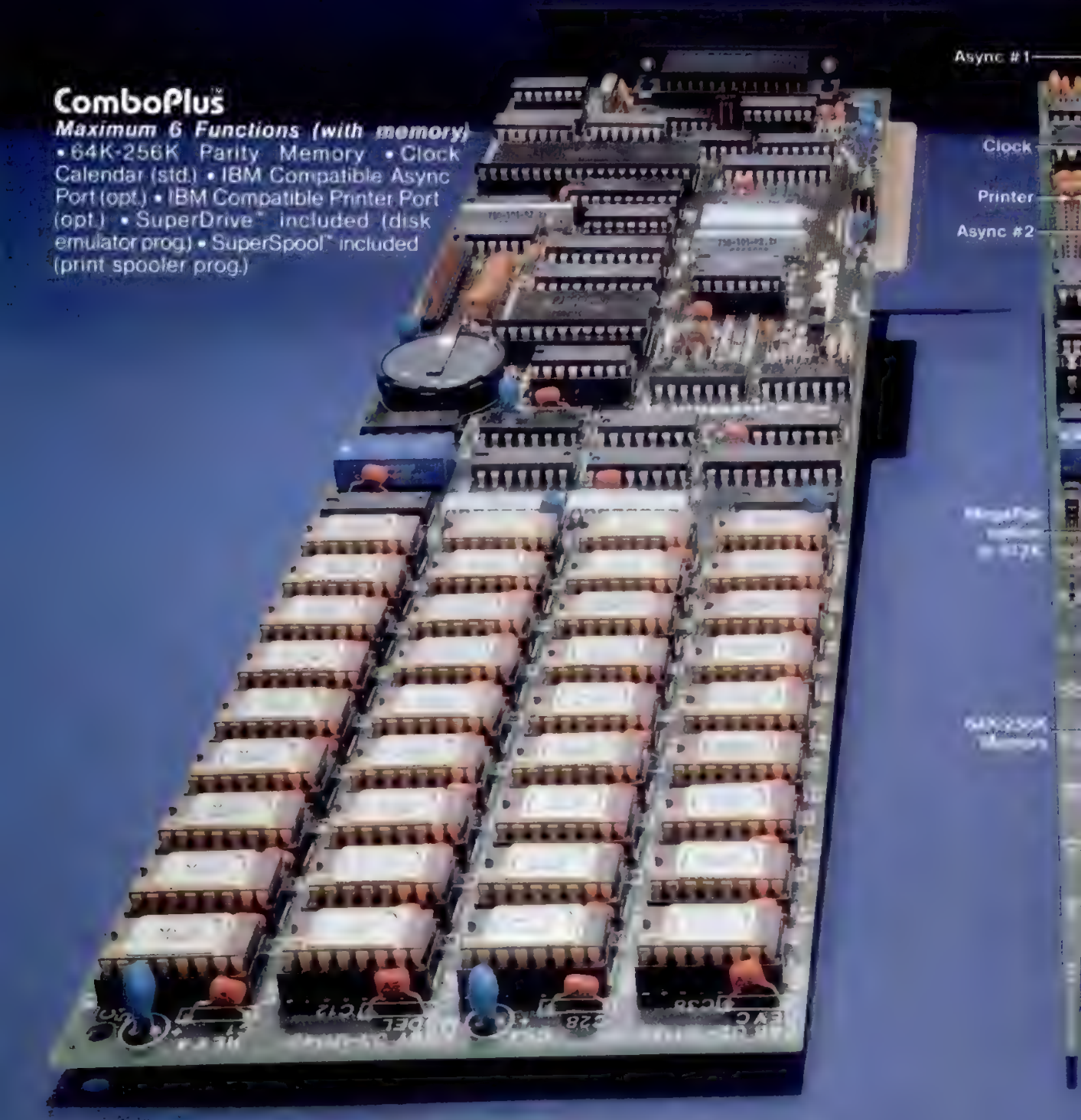
mpucart is mobile to allow multiple users to take full advantage nultifunction features of modern computers and NETWORKS. y also means BACKUP for a terminal or workstation that is down.

mpucart, even with all its features, requires minimum floor space 4 sq. ft.) and is the engineered workstation that suits both you hardware to conserve the human resource and keep your **WARE and SOFTWARE...SECURELY TOGETHER FOR YOU!**

(813) 251-2431 (in Florida)

COMPU-CART 201 North Rome Ave. P.O. Box 2095 Tampa, FL 33601-2095 Ph. (800) 237-9024

The Ultimat
for the IBM



ComboPlus™

Maximum 6 Functions (with memory)

• 64K-256K Parity Memory • Clock Calendar (std.) • IBM Compatible Async Port (opt.) • IBM Compatible Printer Port (opt.) • SuperDrive™ included (disk emulator prog.) • SuperSpool™ included (print spooler prog.)

Other products available for IBM PC: 1) [illegible] Bisync Emulation Package; 2) Advanced Communication Card (Async, Async SDLC, HDLC); 3) Expansion Parity Memory (64K-256K); 4) Disk++ (Memory, Async & disk host adaptor); 5) Original Memory Combo; 6) Async Communication Card (1 or 2 ports); 7) Wire Wrap Card 13.1" x 4"); 8) Extender Card; 9) [illegible] Emulation.

ld-On Cards
C are Here!



I/O Plus™

Maximum 6 Functions (no memory) • Clock Calendar (std.) • IBM Compatible Async Port #1 (std.) • IBM Compatible Async Port #2 (opt.) • IBM Printer Port • SuperDrive included (disk emulator prog.) • SuperSpool included (print spooler prog.)

MEGAPLUS™

Maximum 8 Functions • 64K-512K* Parity Memory • Clock Calendar (std.) • IBM Compatible Async Port #1 (std.) • IBM Compatible Async Port #2 (opt.) • IBM Compatible Printer Port (opt.) • *512K with MegaPak™ option • SuperDrive included (disk emulator prog.) • SuperSpool included (print spooler prog.) • Split memory addressing • Patent Pending.

AST RESEARCH INC.
2691 Richter Ave., Suite 104
Irvine, California 92714
Telephone: (714) 540-1333
Dealer inquiries welcome.

See Us At Booth Numbers 584-586

Nov. 29-Dec. 2, 1982
Las Vegas Convention Center
Las Vegas, Nevada

The Marriage of IBM® & SONY.



Do you, SONY, promise to love and to honor your IBM Personal Computer? —I do.

Do you, SONY, promise to provide flick-of-the-switch Trinitron TV viewing, in sickness and in health? —I do.

Do you, SONY, promise to deliver brilliant full color, till death do you part? —I do.

PROFEEL COLOR MONITOR/TV

- Trinitron's Emmy-award-winning picture tube designed with 150% of the fine-pitched Aperture Grille slits of a conventional 12" tube.
- RGB inputs capable of accepting both digital and analog signals for high-resolution home computer, videotex, or teletex application, plus video and stereo input, 80x25 character display.
- High-tech styling with sleek gunmetal gray cabinet and hidden control panel.

MODEL KX-1211HG

Optional Profeel tuner with full-feature remote control for flick-of-the-switch VHF and UHF reception.

MODEL VTX-1000R

TRINITRON COLOR MONITOR/TV

Offers most of the same high-quality features as Profeel at an exceptional value.

- RGB/video inputs for 16 brilliant, life-like colors (with Atech interfacing module).
- Built-in T.V. reception with infrared remote control.
- Output jacks for stereo, video recorder, tape recorder, and earphone use.

MODEL KV-1223R

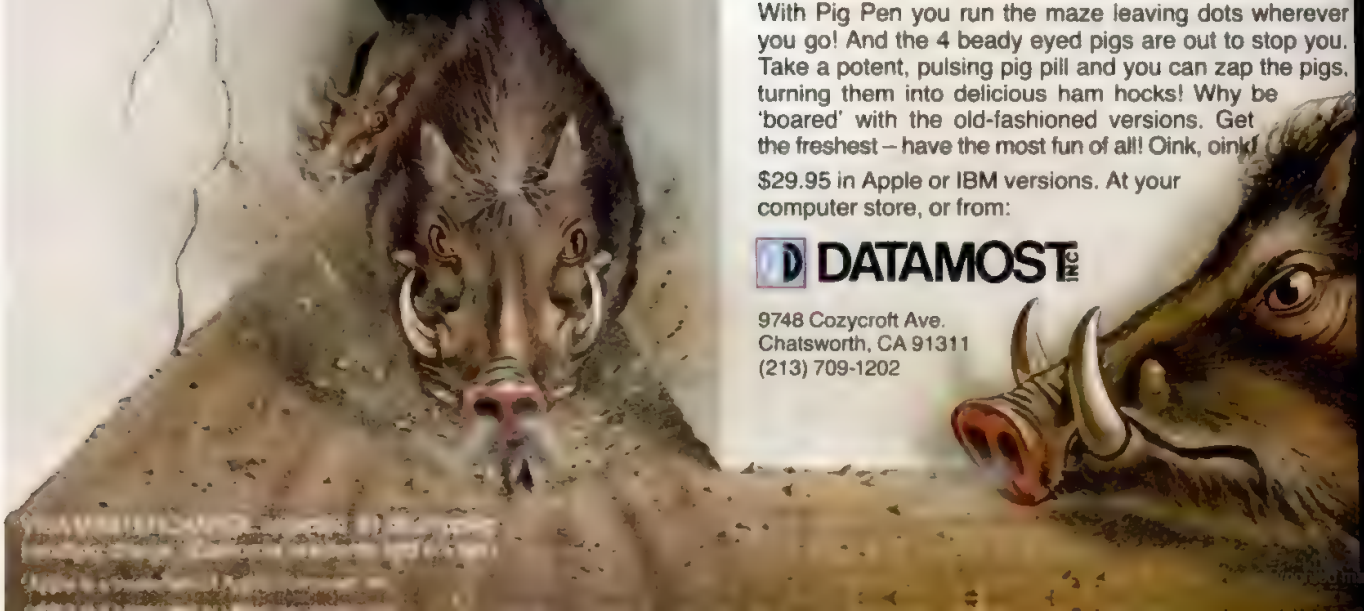
Before committing yourself to a color monitor system, make sure it can say "I DO." SONY. The one and only.

Tokyo Electronics

222 Kearny Street, San Francisco, CA 94108 415/398-1004 TWX 910-372-2249
Call or write for more information. Dealer inquiries welcome.

Profeel and Trinitron are registered trademarks of Sony.
® IBM and PC are registered trademarks of International Business Machines.

WATCH OUT.
The OINKS are loose!



Pig out on fun with

PIG PEN

(for the Apple II* *and* the IBM-PC!)

Here's the newest and freshest idea in dot-maze games. You'll go hog-wild at the way Pig Pen's clever switches make this the most intriguing game you ever got hooked on!

With Pig Pen you run the maze leaving dots wherever you go! And the 4 beady eyed pigs are out to stop you. Take a potent, pulsing pig pill and you can zap the pigs, turning them into delicious ham hocks! Why be 'boared' with the old-fashioned versions. Get the freshest – have the most fun of all! Oink, oink!

$29.95 in Apple or IBM versions. At your computer store, or from:

DATAMOST INC

9748 Cozycroft Ave.
Chatsworth, CA 91311
(213) 709-1202

e destination file's correctness, and
nate parity bits. Many of PIP's fea-
appeal to the programmer or systems
rator; certain situations make these
nced options invaluable. For exam-
hen sending *WordStar* files (which
e parity bit to indicate various word
ssing functions) to printers (which do
ork properly with the parity bit), PIP
ppress the offending bit with ease.
akes longer than MS-DOS's Copy
nand, but it does more.

gital Research deserves credit for
oving its documentation. When Gary
ll developed the first version of
M, he probably never dreamed that
chnical types would use it. CP/M's
nal documentation was written for
computer professional. The typical
PC user would find it incomprehensi-
While the *User's Guide* and other doc-
ntation supplied with CP/M-86 are
ne best I have seen, they are certainly
r than former CP/M-80 books. The
mentation is at least as good as Micro-
and is improving rapidly.

current CP/M-86

ne disk performance of Concurrent
M-86 (CCPM-86) falls short of that of
DOS, but it is faster than CP/M-86.
handling and the user interface
been improved, but they are not
up to the user-friendliness of MS-
2.0. CCP/M-86's multitasking capa-
is what really sets it apart from the
s. That and the ease of access to so-
icated operating system functions
CCP/M-86 an attractive system for
-of-the-art software development.
further details on CCP/M-86 see
current CP/M-86" (*PC*, October

DOS 1.2 and 2.0

Microsoft's MS-DOS, like CP/M-86, is
gle-user, single-tasking operating sys-
In fact, it is so much like CP/M-86
his discussion needs only to highlight
ifferences between them. It runs effi-
ly in as little as 32K of RAM and han-
up to 50 megabytes of disk memory.
osoft developed the first MS-DOS
a product called 86-DOS. Seattle
puter Products (SCP) sold the rights
he system to Microsoft. After adding
ncements, Microsoft released it to
in July 1981 as PC-DOS. Lifeboat As-
sociates, which provides sales and technical support and other services to MS-DOS users, also markets the system as SB-86.

The user interface, or shell, of MS-DOS 1.2 is strongly reminiscent of CP/M-80. An ambiguous A> prompt appears on the left side of the screen, and the user must type commands in cryptic computer jargon in order to do anything. The only help available are a primitive line editor and a thick manual.

ENSURING upward compatibility is a vital issue for hardware and software developers, and computer users at all levels.

Fortunately, Microsoft is giving the MS-DOS 2.0 user interface an extensive face lift. The traditional command-line-oriented shell is there along with a slick, new, menu-driven command input screen. The user selects a command by positioning the cursor next to it with the space bar and pressing Enter. There are windows for the date and time and the current disk directory. Disk files can be selected by typing in a number from 1 and 0, eliminating the need to type in file names. A question mark invokes a context-sensitive Help feature. For example, if the cursor is next to the Copy command, the program will give help information relating to Copy.

The MS-DOS 2.0 shell is customizable; the user can create commands by specifying the meaning of the PC's function keys. Programmers can also customize the menus, commands, and error messages of the shell. MS-DOS 2.0 can be tailored to a particular application, foreign language, or personal preference. Most of the various system utilities display a consistent, menu-driven, customizable user interface, which makes the whole system easy to learn.

Another bonus is that the command shell and screens are similar to those used in the XENIX shell. XENIX is a licensed version of UNIX, a popular minicomputer-based operating system originally developed by Bell Labs and adapted by Microsoft for the 16-bit microcomputer. MS-DOS 2.0 users will have no problem getting used to XENIX. As microcomputers become more powerful, they are going to start looking and acting more like minis. Ensuring upward compatibility is a vital issue for hardware and software developers, and computer users at all levels.

MS-DOS 1.2 supports the full 1 megabyte of memory space addressable by the PC's 8088 processor as long as the memory is contiguous. The range of addresses from lowest to highest must be unbroken; the user can't configure a memory expansion card to start at any address higher than the current top of RAM. MS-DOS 2.0, however, supports noncontiguous memory. Commonly used operating system command functions, such as Copy, Rename, Date, Type, Dir, and batch file processing, remain in memory at all times. Other commands are transient and are loaded from disk only when needed. This feature saves space for large programs when limited memory is available, as in the minimum PC system. The resident commands execute instantly.

Microsoft has streamlined the MS-DOS disk operating system. It is very fast. MS-DOS theoretically can handle disk files up to 1 gigabyte (1 billion bytes). User programs are completely shielded from hardware characteristics. As a result, a program does not have to read from or write to the disk in 128-byte blocks; instead it performs read/write operations of any size randomly in the file. MS-DOS keeps complete disk file information in RAM at all times; it does not need to read the disk directory each time a read or write is performed. Even with multisector operations, the disk hardware can operate at its maximum speed.

Disk operation under MS-DOS 2.0 is further enhanced through the use of multiple disk buffers, or "caches," holding two or more complete tracks of data. Applications can access multiple sectors of data without further disk reads. When more data is needed from the disk, the operating system writes the oldest buffer back to the disk, unless the data in the buffer has not been altered. If this is the case, the old data is simply overwritten by the new buffer.

Virtual disks residing in RAM are also part of the MS-DOS 2.0 enhancements. The resulting speed increase can dramatically shorten the time required to compile programs or use a large program with frequently accessed overlays. The user must install a memory expansion board, such as the Microsoft RAMCard, in his or her PC to take full advantage of this feature.

MS-DOS, unlike CP/M-86, does not require that the user reset the disk system when changing disks. Disks may be changed at any time as long as a file is not being written. MS-DOS also keeps several backup copies of the disk allocation table so that in the event of a head crash or other error, disk file information cannot be lost. The FORMAT utility locks out bad disk sectors so the user will not lose data by accidentally writing to them. The combination of these features guarantees good data integrity in the disk system.

In MS-DOS, applications programs treat all peripheral I/O devices as if they were disk files. Only one set of functions is necessary to perform any kind of I/O. It is possible to change the input or output of data from one device to another without affecting the applications program.

However, changing the input or output from one device to another requires that the user make changes in the operating system; what's more, certain peripherals are not supported by Microsoft for the PC version. Why Microsoft chose to make this procedure so complex is a mystery. It requires getting into the operating system with a debugger, entering patches, and saving the result to disk. This type of complex work is attractive to only the compulsive computer hack; it seems out of place in a system ostensibly aimed at the unsophisticated user.

MS-DOS 2.0 loads and links device drivers dynamically when it is being booted. These drivers are the parts of the operating system that actually operate the system hardware. In MS-DOS 2.0 the user can add or change peripheral devices at any time without a major software overhaul since space for the drivers is allocated dynamically. This ability greatly simplifies upgrading a system to new hardware configurations.

MS-DOS 2.0's software interface for keyboard and screen operations can use the American National Standards Institute's (ANSI) escape sequences. An escape sequence is a terminal command code using the ASCII escape character followed by other alphanumeric characters. Using standard sequences ensures better applications program transportability among similar machines. Matching the control codes used by different computers and terminals to their corresponding software functions can become a jungle of incompatibility for the software developer. By using the ANSI escape sequences, one set of software commands will interface with any terminal. The operating system intercepts these sequences and translates them, if necessary, into the host terminal's cursor movement and editing commands.

MS-DOS 2.0 supports the AT&T Presentation Level Protocol for text and graphics. Presentation Level Protocol provides a way of expressing graphics operations in strings of ASCII characters, instead of using a bit map of the individual pixels of the display device. With the Presentation Level Protocol, programs can access, use, and store graphics screens on disk or send them to peripheral d such as printers without considera the screen resolution or other har details. The Presentation Level P enables MS-DOS to interface with network or data base system that u same protocol with minimal add code—a plus when using a PC wit mercial videotex or network instal

MS-DOS 2.0 is upwardly com with XENIX in many areas. New calls perform identical I/O and d memory management functions. grams compiled on an MS-DOS 2.0 can run under XENIX, and vice MS-DOS passes files to applicatio grams in the standard XENIX form "pipes" can send the output of one to the input of another.

These pipes are temporary disk They are slow on an MS-DOS f based system but fast in a hard-dis DOS or XENIX system. CCP/M-8 forms the same function using q which are much faster since they o

What Is an Operating System?

Understanding the manager's job.

During the early days of computing, engineers and experimenters had to toggle in their programs, setting every single bit by hand with switches or, at best, a crude keypad. To overcome the difficulty of getting increasingly large amounts of data into and out of computer systems, computer scientists developed the operating system. An operating system is a collection of programs that manages the flow and interaction of other programs and data through the various parts of a computer.

Most operating systems consist of three main parts: the supervisor, the software interface, and the hardware interface. The supervisor accepts commands from the operator, allocates system resources such as memory and I/O devices, and controls the execution of user programs. The software interface enables user software, such as applications programs, to access system functions and hardware, such as the display or printer, in a uniform and logical manner. The Basic Input/Output System (BIOS) h ware interface controls the actual c puter hardware. Many of the more phisticated operating systems incl their own text editors, compilers, other software utilities.

Upon receiving a command from user, the operating system superv loads the requested file from the dis accesses a resident utility routine ready in memory and starts it runn Programs written by the user have ac to system resources through the softw interface provided by the operating tem. If the user's program needs to ac peripheral hardware devices, the o ating system BIOS takes care of the tails of the data transfer.

Computer hardware is like the b and motor of a car, while the operat system is like the steering wheel and er controls. The user's applications gram is the driver, which tells the wh system what to do.

—*D.B*

irely in RAM. Pipes can be used by a
a base utility to send mailing list infor-
tion to a word processing program in
er to merge-print form letters. XENIX-
e utilities called filters are also avail-
e with MS-DOS 2.0. Applications pro-
ms can pipe these filters together to
form functions such as sorting and
rching without the applications pro-
ms having to contain these capabilities
mselves. Another feature is the ability
nvoke the command shell from inside a
gram, allowing a program to list the di-
tory without having to duplicate the di-
tory-listing function internally.

Microsoft is working on networking ca-
bility for MS-DOS in the form of an
l-on enhancement software package
ntaining a mail system, file transfer
nction, and other utilities. It will be
mpatible with both MS-DOS and
ENIX, with the XENIX system serving as
ub for several MS-DOS users. The mul-
asking ability of XENIX enables it to
ndle simultaneous I/O requests from
veral network nodes and still act as a
rk station. Files will reside on hard disk
the XENIX system and be sent to and
om work stations as required. The hub
so acts as a switching and relaying center
messages and local-network electronic
ail. Microsoft spokesman Chris Larson
esses, however, that the system has not
en tested and that no release date has
en planned.

An impressive and useful array of soft-
re development utilities is a standard
ture of MS-DOS. A program that trans-
es 8080 or Z80 code into 8086 source
de, a linker, and a library routine com-
e with a powerful assembler to give the
grammer everything needed to take
l advantage of the PC's 16-bit processor.

The MS-DOS translation program al-
ws the user to translate code developed
der CP/M-80 or SB-80, Microsoft's 8-bit
erating system, to MS-DOS 1.2 or 2.0.
me modification beyond simple transla-
n may be necessary to get the programs
run on 16-bit systems, so I suggest that
s tool be used primarily by a technically
ined user.

The linker routine allows the program-
r to write and debug simple modules of
complex software project separately and
en combine them. Similarly, the library
lity forms functions into libraries that
n be called from any program. The pow-
erful 8086 assembler supplied with MS-DOS is the most interesting and exciting utility of all. The assembler syntax, unlike Digital Research's, is compatible with the Intel 8086 assembler, including data structures and bit fields. Data is typed strongly and, most importantly, there is a unique full macro facility including nested macro instructions. SEGMENT and GROUP operators allow the user to consolidate routines at link time, enabling the routines to share segments while retaining local variable definitions.

CP/M-80 IS probably the most widely used microcomputer operating system in the world.

The MS-DOS Debug utility does not have an on-line assembly function. Even if it appears that the bug has been located, there is no convenient way to patch the software to confirm the diagnosis. The user either has to enter the machine language opcodes by hand (not recommended) or go all the way back to the source code to include the changes. This lengthens the debug loop for assembly language programmers. However, in MS-DOS 2.0 the Debug utility should not have this shortcoming.

Error handling is one of MS-DOS's most mature features. The operating system traps disk errors and displays an error message in understandable English, giving the options RETRY, IGNORE, or ABORT. Applications programs running under MS-DOS can also trap these errors and handle them in whatever way is most consistent with the application, ensuring that the applications program is always in control of the system. For example, a word processing program that encounters a physical disk error could request that the user insert another disk or make room by deleting old files so work will not be destroyed. Error messages are thoughtfully consistent across the whole family of MS-DOS utilities, making them very easy to learn. MS-DOS 2.0 also traps errors from serial I/O devices such as modems and printers. Instead of giving a rude error message when the user forgets to plug in the printer, the program pauses to give the same options described for disk errors.

MS-DOS is easy to install. Before an operating system can run on a new computer, system programmers have to adapt it to the idiosyncrasies of the hardware. Adaptation can become a problem, especially when no special features are designed into the operating system to ease the process of "porting" it to a new machine. Several systems programmers who had installed both CP/M-86 and MS-DOS 1.2 on new hardware systems unanimously voted MS-DOS easier to install, citing MS-DOS' better assembler and other utilities, its lack of a size limit on I/O system code, and the absence of any assumptions in MS-DOS as to the nature of the hardware the system will run on. MS-DOS 2.0, with its relocatable I/O driver modules, should be even easier to install.

The documentation supplied with MS-DOS is a typical daisy-wheel-printed, undistinguished compilation of dry computerese. It's published in a bulky ring binder, ensuring that after some use the pages will begin to fall out. Software suppliers should wake up to the fact that most of us are not programmers and that we require readable tutorials, quick-reference charts, and manuals that speak to our actual understanding and use of computers. IBM has set a professional standard for microcomputer user manuals, and PC users are accustomed to this quality.

Microsoft's customer support is perhaps its most serious shortcoming. Many MS-DOS users I interviewed complained that they could not get the kind of technical advice they expect from a large, successful company. When calling Microsoft to inquire how to interface a serial printer to the PC, one computerist was told, "Don't expect any support for serial printers on the PC until IBM is selling one." According to a company marketing representative, "We don't provide any end-user support. IBM is our licensee and customer and we support them." Incidentally, Microsoft has promised a serial printer interface as well as a printer spooler utility for MS-DOS 2.0.

The sort of closemouthed attitude displayed by many Microsoft representatives stands in contrast to the open and helpful spirit in which the microcomputer revolution began. Microcomputer users want increased hardware and software compatibility. The software house that supports this need will come out ahead in the long run. By its insistence on being the "only official" operating system supplier for the IBM PC and its total lack of support for popular Digital Research products, Microsoft seems to be trying to corner the market

CP/M-86 is significantly slower than MS-DOS on floppy-based systems.

on PC software. But it is in danger of painting itself into the opposite corner by failing to provide compatibility with other manufacturers' widely used products and by withholding the necessary information for third parties to patch their systems for special uses.

Evaluations and Conclusions

For the nontechnical user, comparing these operating systems may seem to be a study in abstruse technical trade-offs. Both MS-DOS 1.2 and CP/M-86 are virtual clones of CP/M-80, the widely known 8-bit operating system. However, both manufacturers are racing to add big-system features to their new releases in order to exploit the power of the PC's 8088 microprocessor. Unfortunately, this competition to implement a minicomputerlike system on the PC is making MS-DOS and CP/M more incompatible as they become more sophisticated.

This split increases the pressure to make a commitment to one system or the other. MS-DOS 1.2 is clearly the leader in ease of use, disk I/O speed, error recovery, and its assembly language compiler. However, CP/M-86 offers superior memory management, more flexible utilities, simpler I/O device redirection, and an easier upward-compatibility path to a multiuser or multitasking operating system.

The issue is complicated by the release of the new versions, MS-DOS 2.0 and CCP/M-86. MS-DOS 2.0 is clearly the winner in terms of user-friendliness, and it is available free to Microsoft MS-DOS licensees. (IBM will probably make MS-DOS 2.0 available to PC-DOS users at a nominal cost.) But the powerful multitasking features of CCP/M-86 are attractively convenient. And for users who already know the operator interface to either MS-DOS 1.2 or CP/M, CCP/M-86 is not any more difficult to use. Many microcomputer industry analysts think that within a couple of years, concurrency will be a mandatory feature on all professional micro systems. Full use of the 16-bit microcomputer's power is only possible under a concurrent operating system, be it single user or multiuser. And computer users will not settle for doing one thing at a time when they know they can do four.

For the technically oriented user the decision is no less difficult. Popular 8-bit software development languages such as CBASIC by Compiler Systems (now Digital Research) and Microsoft BASIC are available for one family of 16-bit operating systems or the other but not both. Large amounts of source code written in these languages for 8-bit computers will not run under both operating systems in the 16-bit world without costly and time-consuming translation of software packages.

Another factor is the forthcoming availability of Intel development languages under CP/M-86. This availability is contingent upon Intel releasing its Universal Development Interface for the system. At least one computer manufacturer already has this package up and running on a 16-bit micro. Future Digital Research software enhancements will provide networking compatibility across 8080, 8085-, 8086-, 8088-, and 68000-based micros.

The internal features of CP/M-86 and especially of CCP/M-86 make them more attractive to the applications programmer. But ease of use makes MS-DOS 2.0 the choice for the nontechnical user. Although MS-DOS' early entrance into the PC software race has so far given it a bigger share of the market, CP/M's long-range prospects are healthy. Authors of complex software packages are almost certain to pick CP/M because of its superior memory management, since MS-DOS often forces languages to perform like their 8-bit predecessors. The simpler applications w probably flourish in the MS-DOS enviro ment, while sophisticated packages w probably be written for CP/M.

An interesting observation in this era "upward migration" from 8- to 16-bit co puters is that the full computing power the IBM PC has yet to become available the average user of the machine. The re son for this lag is the simple fact that ne hardware must be physically available b fore software development can begin. T path of upward migration leads ultimate to the "micro-mainframe," a 32-bit des top computer with the performance say, an IBM 360. Although that goal is st several years away, it is interesting to no that the obstacle to its accomplishment probably going to be software develo ment lead time. Meanwhile, we can e pect 16-bit software to go through sever generations of improvement as softwa developers explore the performance p tential of the new machines.

COMPUTER users will not settle for doing one thing at a time when they know they can do four.

The first generation of 16-bit compu ers was an expansion of 8-bit predece sors, and the first generation of softwar for the new 16-bit machines was transla ed from its 8-bit equivalent. Expedienc was hardly the optimum solution. MS DOS 1.2 and CP/M-86 are the first genera tion of 16-bit software systems, while MS DOS 2.0 and CCP/M-86 represent th beginning of the second generation of tru 16-bit operating systems. They are only be ginning to use the inherent power of tru 16-bit machines such as the IBM PC. */P*

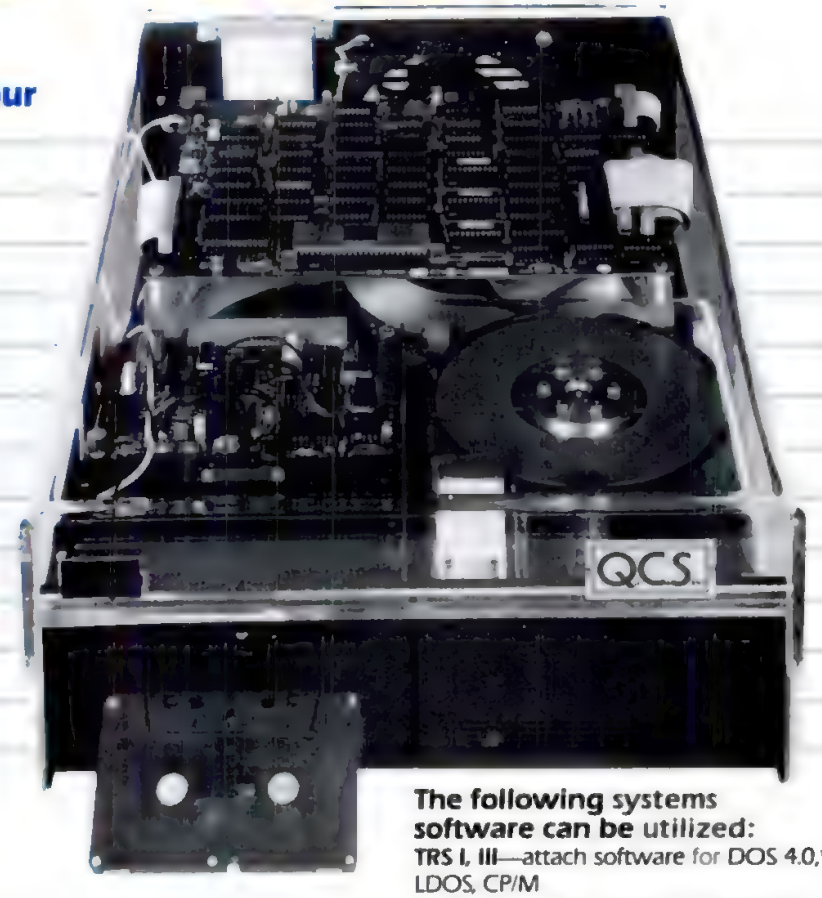
David Hughes is a technical writing con sultant to Digital Research Corporation Pacific Grove, California, where he writing the Concurrent CP/M user man ual and system guide for the IBM PC.

Quality Computer Services Presents ...

Hard Disk Sub-Systems 20 Megabytes for Under $3500!

ystems Are Compatible with Your

- 0® Model I, II, III, XVI
- e II®
- PC
- nStar™
- brain™
- sonic™
- n/Zenith™
- rne™
- Others



Now Available!
Optional 10 Meg. Tape Back-up

ou can expand the capability of icrocomputer with cost-effective orage from Q.C.S. Our inte- family of 12-, 20-, and 40-million- stems lets you operate your vith the speed, convenience, and reliability of systems costing nds of dollars more! And as your row, Q.C.S mass storage can o. You can start with an entry- -million-byte system and expand on bytes ... without scrapping isting programs or operating

ompletely assembled and d system includes:
- ching power supply
- chester drive
- adapter card
- ed case
- Expansion (enclosure, controller, and power supply designed for future backup hardware or increased storage)
- Software
- Auto-attach CP/M
- Hard disk utilities
- Realtime clock
- Formatting program (assigns alternates for any weak sectors detected during formatting—assuring the lowest possible error rate)
- Warranty (a full one-year warranty on all parts and workmanship)

Also available:
- Attach program for TRSDOS and OASIS
- **New CP/M dynamic generator:** configured software; menu-driven for 12-, 20-, 40-, 80-megabyte drives

The following systems software can be utilized:
TRS I, III—attach software for DOS 4.0,* LDOS, CP/M
TRS II, XVI—CP/M Racet for TRSDOS,* Turbo DOS, OASIS
TRS Models II and **XVI** use 6 Meg for CP/M and 6 Meg for TRSDOS.
Apple—CP/M and DOS 3.3
NEC—CP/M
S-100—CP/M
Heath/Zenith—CP/M
IBM—PC DOS, USCD, CP/M 86
Osborne—CP/M

* Available at an additional cost.

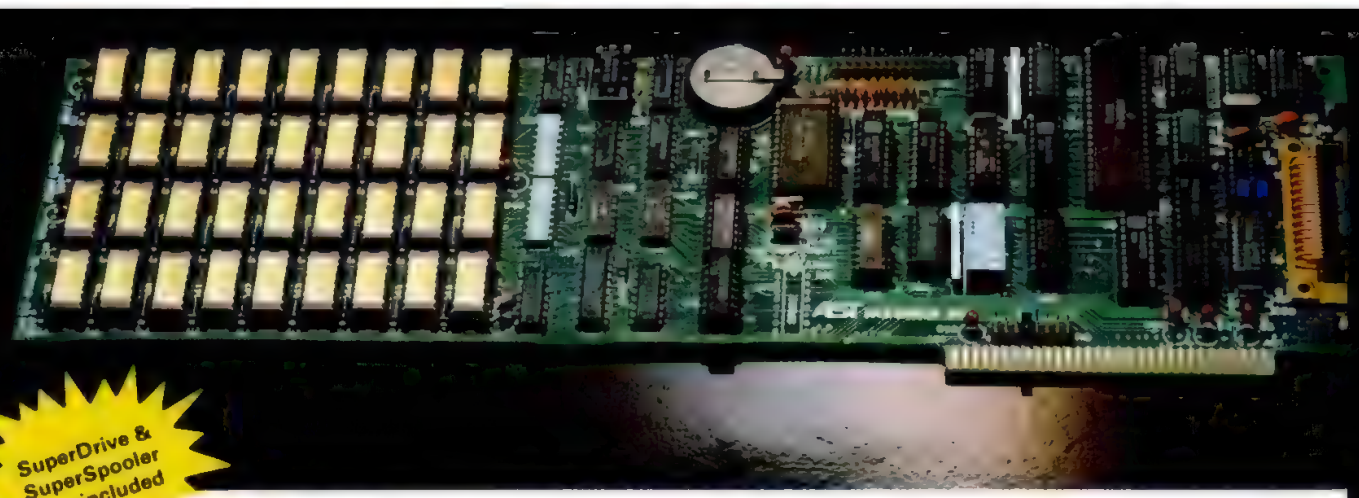
See your local dealer or call:

QCS Quality Computer Services

178 Main Street, Metuchen, New Jersey 08840
Telephone. 201/548-2135

Toll-free number: (800) 631-5944

Quantity discounts available. Distributor, Dealer and OEM inquiries invited.



SuperDrive & SuperSpooler now included

Why pay hundreds more for a four (as in QUAD) function IBM PC board

This may be the only board you need to expand your IBM personal computer. Standard with three functions; memory up to 256K in 64K increments, clock/calendar with battery back-up, and asynchronous communication (RS232C serial) port which can be configured as COM1 or COM2. The optional parallel printer port can be added for those of you with the color graphics board, or if you just need an additional printer port (LPT1 or LPT2). If you would like to have a second async port, that is now available for an extra $100. (In this case QUAD means five.) We sell boards in all possible configurations.

No corner cutting here

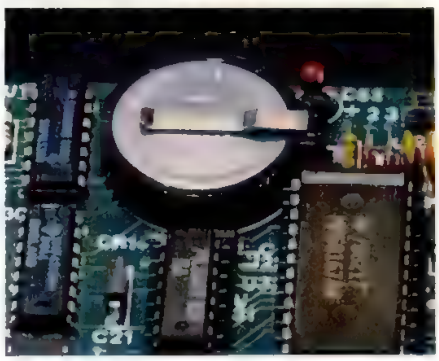
You may think that since this board costs so much less there has to be a catch. The catch is you have to put the board in yourself, and set a switch to tell your computer the board is there. It's all done in less than ten minutes. Our clear instructions with illustrations make it a snap. The board is a four layer design with rows of nine memory chips for full parity checking. Each board is solder masked, silk screened, and has gold plated contacts. The memory chip locations are all socketed. All components are premium grade, meet IBM performance specifications, and are burned in and tested prior to shipment. The highly rated design is well proven with several thousand boards in the field providing reliable service.

How much memory?

We offer the board with your choice 64K, 128K, 192K, or 256K. The SuperSpooler software allows you to assign a portion of the add-on memory as a print buffer. The print buffer accepts data as fast as the computer can send it and frees your computer for more productive work. Your printer just keeps on running until the buffer is empty. The SuperDrive software allows you to use memory as you would normally use a disk. This gives you disk access at the speed of RAM memory. Maximum use of SuperDrive is achieved with the new MegaPlus™ board which allows all functions and expansion to 512K in a single slot.

Clock/calendar & clip-on battery

That round thing in the picture is a lithium battery. It may last as long as five years since it is only needed when the computer is turned off. Note the holder it is in. The under $4.00 battery just slips out and a new one slips in. No soldering required as with some other clock boards. The clock/calendar sets the time and date when your computer is turned on. This is done with a program which we send you on a diskette. The clock on the board is set using the IBM DOS commands TIME and DATE.



Cheap Software too

What good is great hardware without some good software to use it with? We are now offering some untouchable prices on software that can utilize the features of your board. SUPERCALC, the current cream of the spreadsheet crop, will address 512K and is available with a board for just $176. Or how about the new DBase II by Ashton-Tate for just $469?

Why buy from us?

Because we provide the service and support most companies only talk about. We realize how integral the use of this board will be to the everyday use of your computer. What good is a warranty if it takes weeks for repairs to be made? By the time you get your board back from repair you will have forgotten where to put it! We offer 48 hour turnaround or replacement on all warranty repairs. Do you hear anyone else making this promise? Our board comes with little extras like a low cost diagnostics program that let's you do your own testing to be sure you really do have a problem before sending your board for repairs. If you still aren't convinced, and just want to compare prices, remember we don't charge extra for credit cards, shipping, or COD's. If you still want to buy elsewhere ask them if they will face the acid test.

The acid test

Qubie Distributing gives you our 30 day satisfaction guarantee on all board purchases. If you are not completely satisfied we will return the entire cost of your purchase as well as pay the postage to return it. If yo get one of our competitors to give yo same guarantee, buy any other boar think compares and return the one you like. We're not worried because we which one you'll keep. On top of this w you a one year parts and labor warrant a one year extended warranty for $50. ranty repairs are done in 48 hours or w send you a new board.

FREE SOFTWARE

SuperDrive and SuperSpooler Softw lets you use your board as fast acces disk space and as a printer buffer.

TO ORDER BY MAIL SEND:

—your name and shipping address
—memory size. Optional printer port
—software and cables you need
—daytime phone number
—California residents add 6½% sales
—Company check or credit card nur and expiration date. (personal ch take 18 days to clear.)

VISA

TO ORDER BY PHONE:

(213) 870-3718 or (805) 482-98

PRICES:

64K	$375	192K	$
128K	$439	256K	$

(includes async port, memory, clock endar, SuperDrive and SuperSpooler ware)

OPTIONS:

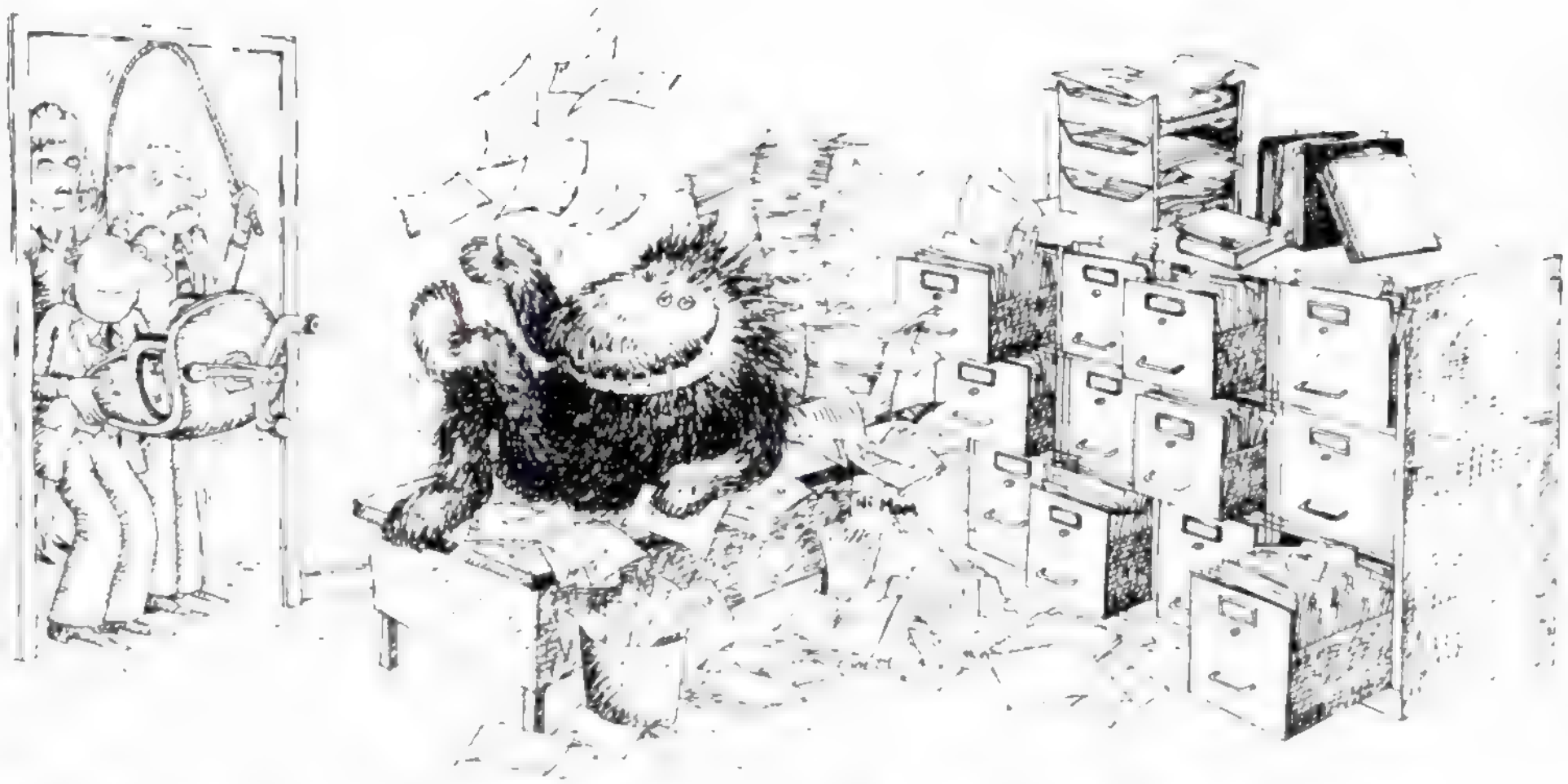
Parallel Printer port
Cable for parallel printers
Cable for Modem or Serial Printer
Memory Diagnostic Diskette
SUPERCALC by Sorcim $
DBase II by Ashton-Tate $

SHIPMENT

We pay UPS surface charges. UPS label air service $5 extra. Credit ca bank check orders shipped same day. sonal or company checks take 18 da clear.

QUBIE' DISTRIBUTING

918 VIA ALONDRA
CAMARILLO, CA 93



Introducing DataFax...the easy way to tame your Data Monster.

If you deal with information, ou're probably dealing with a ata Monster.

He's that mass of notes. cribbled messages. Phone umbers. And all the thousand-nd-one other important ieces of information you have oating around your life.

But with DataFax from Link ystems, you can keep your ata Monster under control—us have a lot more power ver your information than you ver thought possible.

Unlike most "data manager" oftware programs made for our **IBM PC** DataFax doesn't are what your data looks like. r how long it is, how many ems it has or what you want do with it.

The power we've pro-rammed into DataFax makes as simple and natural to use a pencil and paper. You can up a screen with anything ou want—even information ready stored on disk. Then oss-reference it as many dif-rent ways as you'd like—by a ate, a species, a customer's ame, whatever.

So when you need that information, DataFax will retrieve it in a way that's meaningful to you. The powerful keyword function allows you to get information out as quickly and easily as you entered it. And DataFax is the only software of its kind to let you expand from floppy to hard disks, so it will never be obsolete.

If getting so much power for so little effort seems too good to be true, send us the coupon and we'll send you all the details. Or see your **IBM PC** computer dealer and prove it to yourself—before your data situation gets any hairier.



LINK SYSTEMS™

Because whether you've got a monster of a data problem—or just a small one—DataFax can tame it.

I want to tame my Data Monster.

- ☐ **Please rush me more information.**
- ☐ **Dealer inquiry**
- ☐ **Send me (quantity) _____ DataFax for IBM PC at $299** each. CA residents add 6% tax Shipping in U S A $3 00 for first copy, 50¢ each additional copy Foreign, add an additional $10 shipping and handling charge per order

Payment by

☐ VISA ☐ MasterCard ☐ Check

Credit Card # _____

Expiration date _____

Interbank #(MC only) _____

Signature _____

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

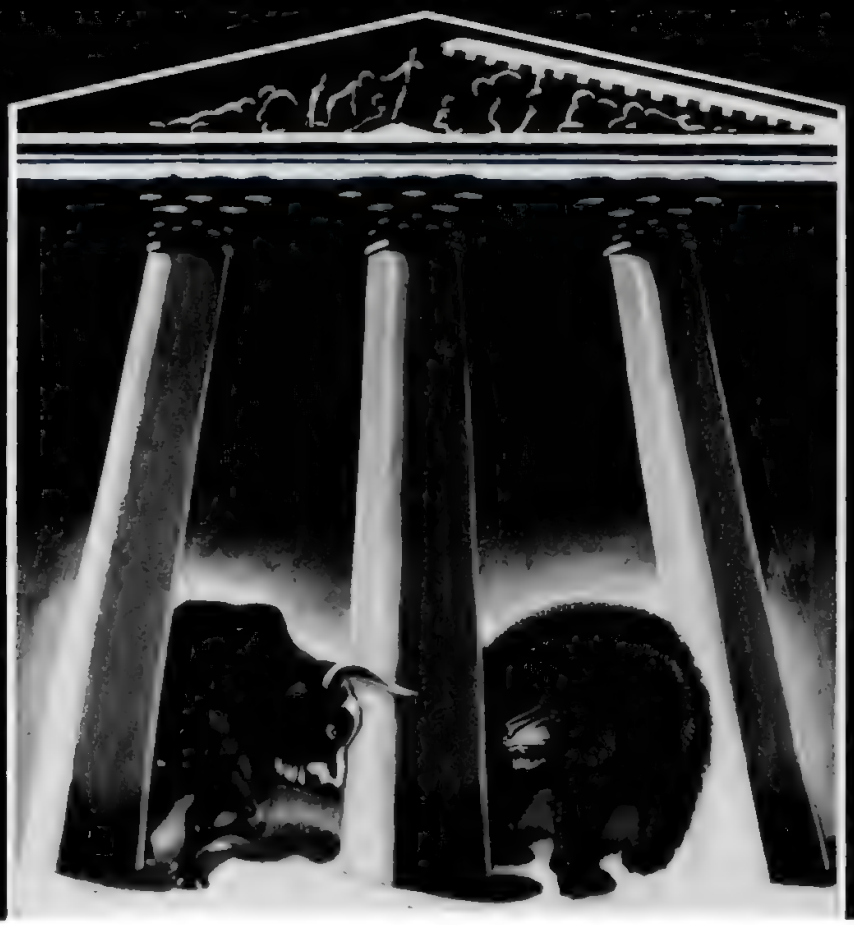
Mail to: Link Systems
1640 19th Street
Santa Monica, CA
90404
(213) 453-1851

IBM is a registered trademark of IBM Corp.

Simply powerful software that links it all together

See us at Comdex Booth 4959

INTRODUCING MILLIONAIRE™...
THE ULTIMATE STOCK MARKET SIMULATION!



BUY U.S. STEEL. SELL GENERAL MOTORS. LEARN ALL ABOUT THE STOCK MARKET. AND HAVE THE TIME OF YOUR LIFE DOING IT!

If you've always been bullish about dabbling in the stock market—but bearish about risking your life savings—you're going to love Millionaire! Because Millionaire offers a unique, no-risk scenario that stretches your decision-making acumen to the limit.

Millionaire™...the game!

You start your financial adventure with $10,000. From there, you wield the power to buy and sell stock from the world's largest corporations. But make sure your skill and logic are at their sharpest, because Millionaire's week-by-week format presents you with a steady stream of real-life industry trends. Analyze these correctly (and invest wisely!), and a financial empire is yours. Ignore them, and run the risk of losing your venture capital.

Millionaire™...the learning aid!

There's much more to Millionaire than exciting, realistic game action—because Millionaire is a learning tool of incomparable value. In fact, once you've read the comprehensive user's manual, you'll be amazed at how much you've already learned about the stock market.

Call options. Put options. Borrowing against your net worth. Buying on margin. It's all here in the most accurate simulation of its type. Maybe that's why today's largest investment houses are finding that Millionaire is the ideal learning aid for their brokers.

Is Millionaire a game or a financial tutor? You decide. Just remember... your financial future rests on your ability to effectively manipulate your stock portfolio with utm skill and daring.

Millionaire. A superb game. A invaluable learning experience. And the best reason ever to own computer! Available at finer com puter and software stores or may be purchased directly from Blue Chip Software.

Available on disk for:

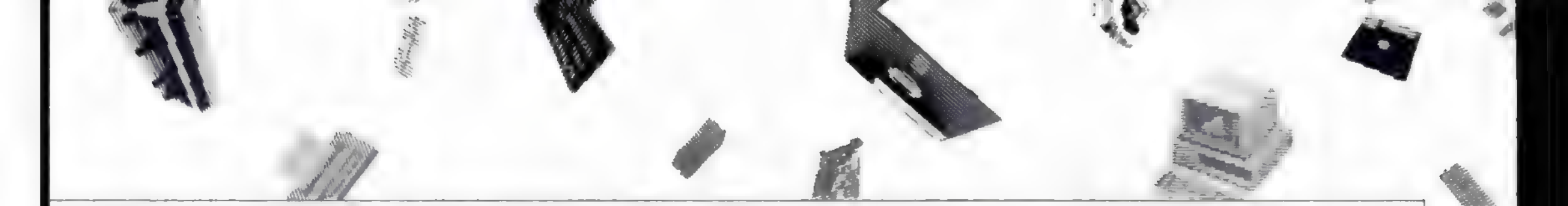
$79.95—Apple II with 48k RAM; Ap III in emulation mode;

$99.95—IBM PC with PC DOS and 6 RAM; Osborne and other C systems with Microsoft Basic

Apple II and III are registered trademarks of Apple Com puter, Inc. IBM PC is a registered trademark of IBM Corp ration. Microsoft Basic is a trademark of Microsoft, Inc., C a registered trademark of Digital Research, Inc. Osbor a trademark of Osborne Computer.

Blue Chip Software

19824 Ventura Blvd., Suite 125
Woodland Hills, CA 91364
Dealer Inquiries (213) 881-8288
1-800-835-2246 Ext. 234



LLOW-UP/COREY SANDLER

Equipping Your *IBM PC* For Word Processing

Your word processing needs—from jotting down memos to writing a novel—should dictate how you outfit your PC. Software, memory requirements, disk drives, and printers are all considered.

When the ancient scrivener of the Great Pyramids sat down to commit his message to stone, he needed the proper chisel, the right rock, and an adequate hammer. If that same scribe were at work on a major project today, he'd find it easier to use a word processing computer for speed, convenience, and accuracy, and he'd be able to crank out extra copies at the push of a button.

But he'd still have to choose the right tools of the trade. What kind of computer? What sort of word processing software? How much memory? How many disk drives? What sort of monitor?

You're probably reading *PC Magazine* because you already own or are considering purchasing an IBM Personal Computer or a compatible system. Getting the right computer for your needs should be your first concern when setting up for word processing.

The IBM PC is a very capable machine that can become a first-class word processor. Unlike the Apple, which has to be modified and built up with lowercase adapters, 80-column display cards, and other devices, the PC itself is fully able when you take it out of the box. Unlike most 8-bit microcomputers now on the market, the PC has a 16-bit architecture that allows users to easily expand the internal RAM well beyond the 48K or 64K limit of many older designs.

The phenomenal sales growth pattern set by the PC in its first year should mean that much of the hardware and software development for microcomputers in coming years will be aimed in its direction.

The PC has a comfortable keyboard with an accurate but light touch and a reassuring click as each key makes contact. All is not perfect, however. IBM, whose Selectric typewriter keyboard has become the industry standard because of its ease of use and organization, chose to make a few minor but annoying changes when it designed the PC. One is the placement of an

DATAEASE

A TOOL FOR MODERN TIMES...



DATAEASE is a new data base system designed to be user friendly through the use of familiar terms and procedures found in a office environment, a menu-oriented design making full use of function keys and displa features.

Requires no programming expertise

Sophistication via relational data structure makes data handling simple and requires n programming expertise. A flexible forms editor allows the defining of data entry form and data retrieval by answering simple ques tions. In turn, the forms and text provide fas and accurate data collection and retrieval vi a minimal number of keystrokes.

Advanced technology

DATAEASE is programmed in 'C' for efficiency and utilizes relational data models which provide greater flexibility, usually only found in large mainframes. Designed for common business applications, DATAEASE requires 128K of memory and 600K of disk storage. It uses B-tree indices for efficient accessing along with cache memory to retain the most recently used disk sectors which reduce disk access up to fifty percent. The system provides password protection with three levels of security.

Asking questions or generating reports

A simplified, yet comprehensive English-like query language guides the user in construc ing sentences by selecting from multiple choices. Selection of any arbitrary subset o data while sorting and performing arithmeti calculations and summary functions are standard features. The report editor will automatically produce report formats or pro vide report customization which is ideal for mailing list applications.

Software Solutions, Inc.

For more information, please write or call Software Solutions Inc., 57-C Wedgewood Rd., Stratford, CT

(203) 377-3268

tra key, a backslash, next to the left upift button. A second frustration is the degn of the two upshift buttons themselves; ey're only slightly larger than letter keys d a bit difficult for a typist who is used to e Selectric's lily pad. In any case, most pists should need only a few hours of aptation.

On the positive side, the ten function ys along the left side of the keyboard low the PC, when used with a suitably werful word processing program, to imic a dedicated word processor. The nction keys delete words, insert lines, nter text, call menus, reformat text, and rform other assignments.

The PC keyboard is separate from the mputer itself, attached by a coiled wire. he distance, angle, and elevation of the yboard may be adjusted as you type, ofring comfort and speed. Some writers ight want to place the keyboard on their ps or even stand up as they type. The odular design would also allow you to nstruct a work station with the disk ives and computer stored above or bew the desk surface, leaving more room r papers. The monitor is a separate piece equipment. You may choose the device at best serves your needs, and place it in e most comfortable position.

he Program

Everyone who wants to process words s different requirements. Some look for easy way to send short notes. Others nt to prepare three-page form letters for their business. Some write term papers, magazine articles, the Great American Novel, or a new unabridged encyclopedia. Each of these requirements can be met by a different set of hardware options and software.

MERGING is an easy process.

This issue offers reviews of several of the latest word processing programs for the PC. And many more will come. In making your decision, work backwards from the end product you will need. The simplest and least expensive software will easily handle short letters. A moderately powered and priced program will do form letters and short papers and articles. The super packages will breeze uphill on the long pieces as well as provide special effects such as automatic indexing, tables of contents, footnoting, word counts, and spelling and grammar checks.

Memory

Three things should be considered when deciding on memory requirements. How much internal random access memory (RAM) is required to hold the word processing program and your work in progress? How much storage memory in the form of disks (hard or floppy) is necessary to hold your copy? And how many disk drives are required or advisable?

You should probably plan on at least 64K of RAM to afford most PC word processing programs sufficient elbow room. At least one program, *Write-On*, claims it will work with only 48K, but the manufacturer advises 64K for best efficiency. Another program, *Volkswriter*, strongly recommends 128K, which requires the addition of at least one memory expansion card inside the PC. *WordStar*, *Perfect Writer*, *The Final Word*, *Select*, and many others require at least 64K. You may find, as PC's Lawrence Magid indicated in his August review of *WordStar*, that the program will be very sluggish when operating under the minimum memory setup.

Differences in memory requirements are only partly due to the advanced features of some of the programs. The basic structure of a particular program is a significant factor for some users.

Programs such as IBM's version of *EasyWriter*, or *PowerText* or *Benchmark*, process the copy currently in RAM only. As an example, *EasyWriter* and PC-DOS occupy about 45.5K of RAM. This leaves only about 18,500 chracters in memory for your copy—about 3,500 words. Actually, IBM recommends that files be limited to about 10,000 characters or 1,900 words for efficient operation. (A character count on the menu display page of *EasyWriter* tells how much space is left in RAM, and the program begins to beep as you near the limit.)



PCsoftware Trade Mark

4155 CLEVELAND AVENUE, SAN DIEGO, CALIFORNIA 92103

Just take a moment to compare the features of this great new program to any other Blackjack Game!

- Full Color use and Monochrome.
- Tutors you with the basic strategy or Julian Braun's Point Count System.
- Tournament play based on Las Vegas tournaments.
- Select any playing rules, including Double Exposure.
- Maintains Player Statistics for each session.
- Six players (mono) and five players (color).
- PC can play any hands with either strategy.
- Realistic Table Layout.
- Single or multiple decks.
- Many 'Help' Screens.
- Can display card count.

Just send $34.95 or specify C.O.D. (add 6% sales tax for California residents) or visit your nearest...

ComputerLand

Realistic Casino Action!

Championship Blackjack™

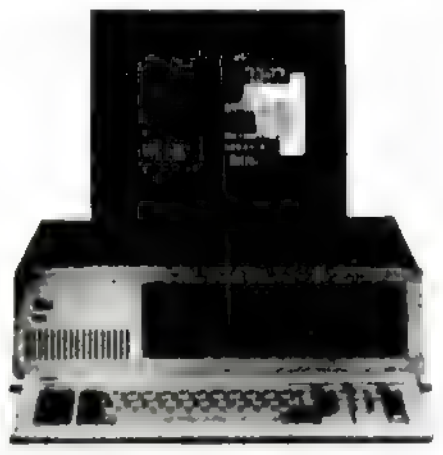


For Use With Your IBM® Personal Computer

Requires: IBM® PC, 64K, 1 Drive, DOS, BASIC, any monitor.

COLOR MONITORS FOR IBM® & APPLE® USERS

TAXAN RGB vision I $399.00



- RGB ● 16 COLORS
- 12" 80 CHAR. ● 380 LINES H RES.
- 1 YEAR WARRANTY
- 90 DAY FULL EXCHANGE
- IBM CABLE $19.00
- APPLE III $19.00
- APPLE II I/F CARD $129.00

OTHER MODELS AVAILABLE

SMITH CORONA TP-1

DAISY WHEEL PRINTER

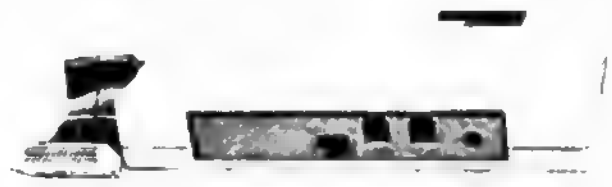
$695.00



- 120 WORDS PER MINUTE
- PARALLEL OR RS-232C/SERIAL (SPECIFY)
- FULL LETTER QUALITY

SIGNALMAN MODEM MARK I For use with RS-232-C

- **300 BAUD SERIAL $99.00**



- INCLUDES CABLE & CONNECTOR
- DIRECT CONNECT
- BATTERY OPERATED(9 Volt DC Adapter Available)

Terms and conditions: (C.O.D. - Cashier's Check Only)
CHECK ● MONEY ORDER ● WIRE TRANSFER
Texas residents add 5% tax.
PREPAY - 5% DISCOUNT
Plus we pay the freight!
F.O.B. Dallas - Shipment by UPS or customer choice (specify).

To order call or write:

ATARA, INC. DOMESTIC / INTERNATIONAL

P.O. BOX 280413
DALLAS, TEXAS 75228
214/669-1520

IBM® is a registered trademark of IBM Corporation.
APPLE® is a registered trademark of Apple Computer Company.

With a particularly long piece, you would simply divide it up into chapters of ten or more double-spaced pages and breeze along. In fact, *EasyWriter* and other similar programs allow users to link files for printing and some editing functions. Merging two full-capacity pieces into one may cause some difficulty; it can be done, but not very quickly or conveniently.

If you're writing a book or a lengthy presentation, you might want to look for software that employs disk buffering or virtual memory—the program can handle files larger than internal memory. As you pass the end of available memory, the program "swaps" data to and from the disk. The process is all but invisible to the user, although some programs require that you wait for a few seconds while the disk drive head hunts and pecks back and forth.

When operating under a disk buffering system, choose the length of a file that matches your needs, not the computer's. You will still want to break up your opus into chapters or other divisions because the machine tends to slow down when its buffers are full. The decision is yours. A task such as merging two very long files is an easy process. The theoretical limit becomes the total available capacity of your disk drive—more than 300,000 characters on a double-sided disk.

Monitors

Be kind to your eyes; buy a quality monitor. The extra black and white or color television from the den just won't do for serious word processing. If you want high-resolution color graphics, you'll need an RGB (red-green-blue output) color monitor. If you want color for games and other nontext uses, consider buying a good monochrome monitor and keeping that color television (and its required RF adapter) nearby.

If possible, spend time in front of the monitor before making a purchase. Is an ordinary white on black screen good enough? Or would a soothing white on green or green on black screen be preferable? Perhaps the new amber phosphors are the most attractive. The desirable qualities are sharpness, ease on the eyes, and resistance to glare. The lighting of the room in which your computer will operate is the key factor—not the lighting in the store.

IBM sells two video display cards. T monochrome card is designed primar for use with IBM's own monochro green display. It produces the sharpest te image, a 7x9 dot character with two-d descenders for letters such as *g*, *j*, *p*, *q*, a y. It will not produce graphics.

IBM's color display card, which c drive monochrome monitors as well color monitors and television sets, pr duces a slightly less pleasing character s drawn with a 5x8 matrix and only one d for descenders. If you're working with si gle spacing on the screen, you'll be like to find the descending letters of one li bumping into some ascending characte (*b*, *d*, *f*, *h*, *i*, *j*, *k*, *l*, and *t*) of the line belo

Examine the differences in the d plays produced by the two cards. If t difference seems great to you, you mig want to include the monochrome displ card in your PC. If you need graphics color as well as the highest resoluti monochrome, you'll need both cards.

Disk Drives

You're going to need at least one d drive; for most applications two would nice but are not required.

Word processing software must loaded into the PC's memory from a di Unless you have no interest in saving yo letters, you'll need a disk as a storage m dium. Many programs allow you to op ate with only one disk. Some loss of conv nience and speed will result, however, you pop program and data disks in and o to copy, transfer from disk to disk, a check indexing and spelling.

If you're going to start with only o disk, the double-sided, double-dens disk is the best bet; it offers twice the st age capacity at much less than the cost another full drive.

If software is loaded into RAM on and stays there (IBM's *EasyWriter* is o program that operates this way), you're and running. All the commands and m sages will be resident at all times.

If, on the other hand, your word p cessing program requires the PC to co back to the disk for instructions or spec functions (as in *WordStar*'s overlay s tem), the way to use a one-disk setup is copy the software onto each and eve storage disk for word processing. Th your PC can go back to the one disk both program and words to process. Bef

Smile.

The IBM PC software you've been waiting for is here.

First, there's one thing you should know about software. You should know about the company that offers it.

If you're not familiar with Lifeboat, pick up the June/July issue of this magazine and turn to page 159.

You'll see we're given major credit for standardizing CP/M® for 8-bit microcomputers. We've published, sold and backed (all the way) more 8-bit software than anyone else in the world.

In the same issue, we're also given major credit for helping establish IBM® PC DOS as the standard operating system for 16-bit microcomputers.

And now we're happy to announce a library of software to work with the IBM PC DOS. 32 new programs—and it's just the beginning. Dozens more are in the works.

Initially, we went for what you needed most. Range and depth. Every major function your IBM PC was designed to perform is covered.

Word processing, financial planning, accounting, data base management, languages and telecommunications. They're all here, fully tested and ready to go.

They are easy to use, so you'll feel at home right away. But if you do have a problem our hotline is open for full-service support.

And if your needs go beyond our current 16-bit group we have over 200 additional programs available.

It's the widest selection, by far, offered by anybody in the industry.

Just give us a call. (212) 860-0300. Or fill out the coupon. We're here to help you bring out the best in your machine.

Yes! Yes!

☐ **Please send me further information on IBM PC software.**

☐ **Please send me your complete Lifeboat catalogue.**

Lifeboat Associates
1651 Third Avenue
New York, New York 10028
TWX: 710-581-2524 (LBSOFT NYK)
Telex: 640693 (LBSOFT NYK)

Name _____ Title _____

Company _____ Bus. Phone _____

Street _____

City _____ State _____ Zip _____

Lifeboat Associates
World's No. 1 source of micro software

CP/M is a registered trademark of Digital Research, Inc. IBM is a registered trademark of International Business Machines Corporation. Copyright © 1982, by Lifeboat Associates

10 GREAT NEW PROGRAMS FROM

Single SOURCE Solution™

1. STOCKMAP™ **$49.95**
An interactive program to draw bar charts for stocks or commodities on a weekly or daily basis and to display or print a detailed graph of high/low and closing prices and volume. STOCKMAP also displays short- and long-term moving averages with user-selectable periods as well as price/earnings ratios and dividend yields. Easy to use, STOCKMAP is available for HP-85 users. A Microsoft BASIC version will be available January 1983 for IBM-PC users.

2. PORTMAP™ **$49.95**
Analyze your existing investment portfolio, whether it contains stocks, bonds, moneymarket instruments, and/or other securities. PORTMAP's summary report analyzes cost basis, number of units, and expected income by account, type of security, month of payment, and taxability (Federal, State, or non-taxable). The gain/loss report analyzes market values, gain/loss, and holding period by individual lot and type of security; margin account status is also reported. For ease at tax-time, a special report containing all required data for Schedule D is provided. Any number of portfolios may be processed, and data may be selected by portfolio or individual accounts. All data entry is interactive and user-oriented. PORTMAP is written in Microsoft BASIC and will be available in September 1982 for the IBM-PC and other computers running MS-DOS or CP/M.

3. INTERACTIVE RESUMÉ™ **$49.95**
A user friendly program for updating or tailormaking your resumé to meet the needs of particular job opportunities. Use a menu-driven set of routines related to education, volunteer and work experience, special skills, work objectives, etc. to functionally define your resumé using accepted managerial psychology principles. INTERACTIVE RESUMÉ provides special text formatting features. A detailed manual is included.

4. THE ADDRESSOR™ **$49.95**
A name and address filer system, alphabetized and adaptable to a 2" by 3" binder. It will also print address labels as well as remind you of important dates. Set to run on the IBM-PC under PC-DOS with at least one disk drive and Disk BASIC, ADDRESSOR includes a tutorial on setting up the filing system and a detailed manual.

5. PCWORD™ **$49.95**
The sophisticated Full-Screen Text Editor. PCWORD runs under PC-DOS and Disk BASIC and provides optimum use of the full IBM-PC keyboard. All the normal text editing functions are available including online "help", automatic file saving, paging up and down, etc. All function keys may be redefined for the convenience of the user. Detailed manual is provided.

6. PCSCREEN™ **$49.95**
Paint your screen any way you want and have an efficient BASIC program module written for you for inclusion in various programs. PCSCREEN runs under PC-DOS and Disk BASIC. You type on the screen just as you wish to see formats in your program, complete with input fields and protect prompts. A ready-to-run BASIC program segment is generated that can be linked to your own program. Various fields may be colored with reverse-video, high and low intensity, etc. A "help" module is included to simplify the programming tasks even further, as well as a detailed manual.

7. PCFORMS™ **$49.95**
A super text-formatting system which runs under IBM-DOS and Disk BASIC with at least 32 Kbytes of memory. Designed specifically for operating with the line printer, text may also be formatted for display on the screen. PCFORMS supports macros nested ten deep and printer specifications for overstrike, doublestrike, etc. PCFORMS accomplishes five main functions: Setting Text Characteristics, Text Formatting, Page Control, Printer Control, and Macros. When combined with PCWORD, PCFORMS provides all word processing capabilities of software selling for considerably more.

8. XREF™ **$39.95**
A complete cross-reference utility for PC-DOS Disk BASIC programs. XREF will first generate a listing of your program with formatting that aids in the program's readability, such as indentation, pagination, program name, time and date, etc. It will then print out a list of every variable, their line numbers, and finally a table of all line numbers. Since large arrays are used, XREF requires as much memory as possible.

9. PCGRAPHS™ **$49.95**
Providing full graphics capabilities. Coming Soon!

10. COMPLETE ACCOUNTING SYSTEM **$149.95**
Coming Soon!

Dear Single SOURCE Solution,
Please enter my order for the following programs at your special 10% discount rate through 1982.

Circle program(s) ordered: **1 2 3 4 5 6 7 8 9 10**

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ PHONE ( ) _____

Make check or money order payable to: Single SOURCE Solution

(California residents add 6%)

Postage and Handling add $2.00; C.O.D. add $1.50

TOTAL AMOUNT ENCLOSED $ _____

Satisfaction Guaranteed or Your Money Back in 10 Days • Dealer Inquiries Invited

Mail today to: Single SOURCE Solution
2699 Clayton Road
Concord, CA 94519

or Call: (415) 680-0202

u go this route, be sure the software you e proposing to buy is not copy protected copy limited.

Be aware, when taking this route, that u will be sacrificing a not insignificant unk of storage space on your disks. *ordStar* for the PC, for example, togeth- with COMMAND.COM, takes up about 3,000 characters as delivered—almost of the 160,000-character capacity of a ngle-sided disk and half a double-sided sk. However, it is possible to reduce the

If YOUR publisher won't look at a manuscript made up of dots, your word processing investment will not get much of a return.

e of *WordStar* and some other pro- ams by removing tutorials and text ex- mples once you are comfortable with the ogram. If you're completely at ease with program, don't need all the menu ompts, and can answer printing format d other system queries without the aid full instructions on the screen, you can n back on some of the overlays. Re- mber to do your experimenting on a ckup disk and not the original.

If you are working on a new un- ridged encyclopedia or some other ngthy and complex job and your budget ows it, you might consider purchasing a rd disk system. This device, built ound a magnetized platter that is usually nremovable, can store huge amounts of ormation. A 10-megabyte hard disk (not largest available) could store about 1.8 llion words, or 18 volumes of 100,000 rds each. Remember, however, that u're still going to need a floppy disk ve to enter software programs and to ke backup copies for safe storage.

inters

Not all word processing applications uire a printer. The all-electronic office ght ship words over a wire or telephone line from one end of the office to another or from one end of the world to another. And several computers can share a single remote printing facility. Renting time on a high-speed printer owned by someone else is also a possibility. CompuServe, for example, will accept your copy over the telephone lines, print out a hard copy, and mail it back to you.

These applications all require a communications capability in your PC—a communications card with a serial output and a modem to connect your computer to your telephone lines and communications software. For the most common word processing uses, you'll probably want the ability to produce your own hard copy right at your desk. Printing devices have two major subdivisions: dot matrix and daisy wheel. Details of the various attributes may be found elsewhere in this issue.

Dot matrix printers are fast, quiet, and inexpensive. They produce lighter, more coarsely drawn characters, and show off their pin-dot parentage. Daisy wheel printers or converted typewriters are generally slower, noisier, more expensive, and the print looks as if it comes from an electric typewriter.

The question to ask yourself is: Who is going to read my printed product and what kind of prejudices will he or she bring? If your aunt in Dubuque doesn't mind a dot matrix printed letter, you're all set. But if your publisher won't look at a manuscript made up of dots, no matter how well connected, your word processing investment will not get much of a return.

You might try surveying the people who receive your product. If money is no object, consider buying one of each—a dot matrix for quick printings of proofs and a slower daisy wheel for the final copy.

The needs of your expected end product should determine how you equip your word processing computer. Don't buy a Cadillac if you're going to take quick trips around the block. But don't buy a bicycle if your regular output is the computer equivalent of a cross-country expedition.

And then go forth and process. */PC*

Corey Sandler is a speech writer and author who works and lives in Albany, New York. A book on business communications scheduled for publication next year and two novels in progress reside in the memory of his IBM Personal Computer.

I.B. MAGAZETTE

New Form of Two-Way Communication
•
Magazine on Diskette
•
National User's Group
•
Program Exchange
•
Medium for Free Exchange of Information Between PC Users
•
Recreational, Educational, Easy to Use New Idea
•
Fun

Each issue (on diskette) will be mailed to you. After reading the issue, the diskette is copied & returned to us so that we may review your input of programs, comments or questions for possible inclusion in a future issue.

REQUIRED: IBM* PC WITH 48K AND ONE DISK DRIVE

INITIAL DISKETTE $15.00.
SUBSEQUENT ISSUES $10.00 WITH RETURN OF DISKETTE.

TO JOIN COMPLETE FORM & MAIL WITH YOUR CHECK TO:

I. B. MAGAZETTE
1306 Petroleum Tower
Shreveport, LA 71101

Name

Address

City

State/Zip

IBM is a trademark of Business Machines Corp

Apple II

Quality Disk Software from SPECTRUM

IBM PC

PERSONAL FINANCE MASTER

The premier personal and small business financial system. Covering all types of accounts including check registers, savings, money market, loan, credit card and other asset or liability accounts, the system has these features:

- Monthly Transaction Reports
- Budgets Income & Expense
- Reconciles to Bank Statements
- Prints Checks & Mailing Labels
- Automatic Year-End Rollover
- Prepares a Net Worth Report
- Searches for Transactions
- Handles Split Transactions
- User-Friendly Data Entry Forms
- Fast Machine Language Routines
- Extensive Error Trapping
- HI-RES Expense/Income Plots

For Apple II (48K) & IBM PC $75.00
Manual & Demo Disk only $15.00

COLOR CALENDAR

Got a busy calendar? Organize it with Color Calendar. Whether it's birthdays, appointments, business meetings or a regular office schedule, this program is the perfect way to schedule your activities. The calendar display is a beautiful **HI-RES** color graphics calendar of the selected month with each scheduled day highlighted in color. Using the daily schedule, you can review any day of the month and schedule an event or activity in any one of 20 time slots.

For Apple II (48K) $30.00

BUSINESS SOFTWARE SERIES

Both Programs $250.00

A user-friendly yet comprehensive double-entry accounting system employing screen-oriented data input forms, extensive error-trapping, data validation and special routines for high speed operation. The series includes these two modules:

GENERAL LEDGER: A complete accounting system with these features:

- Up to 500 accounts and 500 transactions per month.
- Interactive on-screen transaction journal
- Prints checks and mailing labels.
- Produces these reports:
  - Transactions Journal
  - Account Ledgers
  - Income Statement
  - Balance Sheet
  - Account Listings

For Apple II (48K) & IBM PC $150.00

ACCOUNTS RECEIVABLE

A flexible system with these features

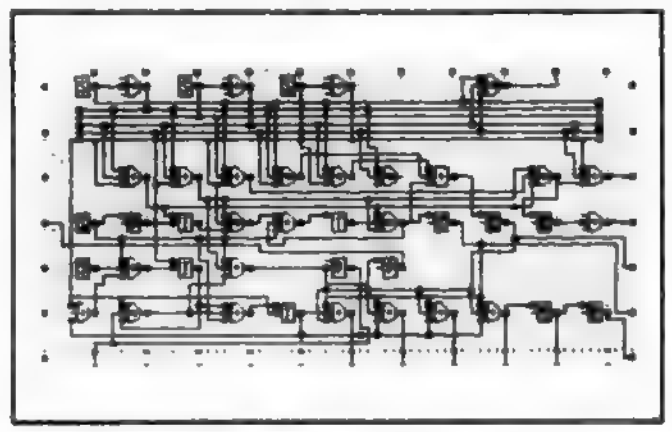
- Up to 500 accounts and up to 500 invoices per diskette.
- Prints invoices, customer statements & address labels.
- Interfaces to General Ledger.
- Interactive screen-based invoice work sheet.
- Produces these reports
  - Aged Receivables
  - Sales Analysis
  - Account Listings
  - Customer Balances

For Apple II (48K) & IBM PC (2 DRIVES) $150.00

LOGIC DESIGNER & SIMULATOR

An interactive **HI-RES** graphics program for designing and simulating digital logic systems. Drawing directly on the screen the user interconnects gates, including **NAND, NOR, INVERTER, EX-OR, T-FLOP, JK-FLOP, D-FLOP, RS-FLOP, USER-DEFINED MACRO** and **N-BIT SHIFT REGISTER** types. Network descriptions for the simulation routines are generated automatically.

The program is capable of simulating the bit-time response of any logic network responding to user-defined source patterns. It will simulate networks of up to 1000 gates. Includes a source pattern editor, **MACRO** editor and network editor. Produces a fan-out report. Simulation output is a string of 1's & 0's representing the state of user selected gates for each bit time of the simulation.
A typical page of a logic drawing looks like this:



For Apple II (48K) & IBM PC (2 DRIVES) $250.00
MANUAL AND DEMO DISK: Instruction Manual and demo disk $30.00

MATHEMATICS SERIES

The Series Includes These 4 Programs:

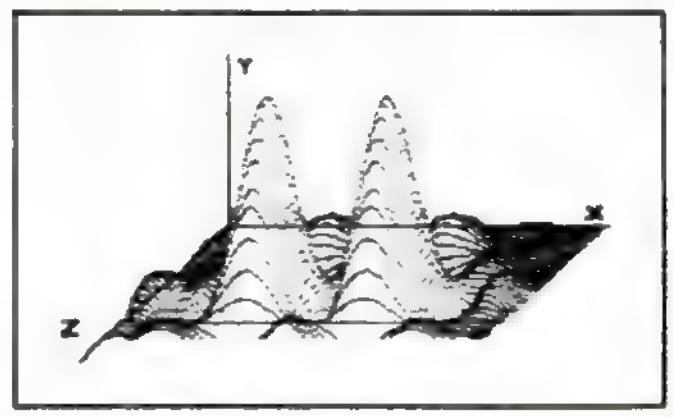
STATISTICAL ANALYSIS I: This menu driven program performs **LINEAR REGRESSION** analysis, determines the mean, standard deviation and plots the frequency distribution of user-supplied data sets.

NUMERICAL ANALYSIS: HI-RES 2-Dimensional plot of any function. Automatic scaling. At your option, the program will plot the function, plot the **INTEGRAL**, plot the **DERIVATIVE**, determine the **ROOTS, MAXIMA, MINIMA** and **INTEGRAL VALUE.**

MATRIX: A general purpose, menu driven program for determining the **INVERSE** and **DETERMINANT** of any matrix, as well as the **SOLUTION** to any set of **SIMULTANEOUS LINEAR EQUATIONS.**

3-D SURFACE PLOTTER: Explore the **ELEGANCE** and **BEAUTY** of **MATHEMATICS** by creating **HI-RES PLOTS** of 3-dimensional surfaces from any 3-variable equation. Disk save and recall routines for plots. Menu driven to vary surface parameters. Hidden line or transparent plotting.

For Apple II & IBM PC $50.00

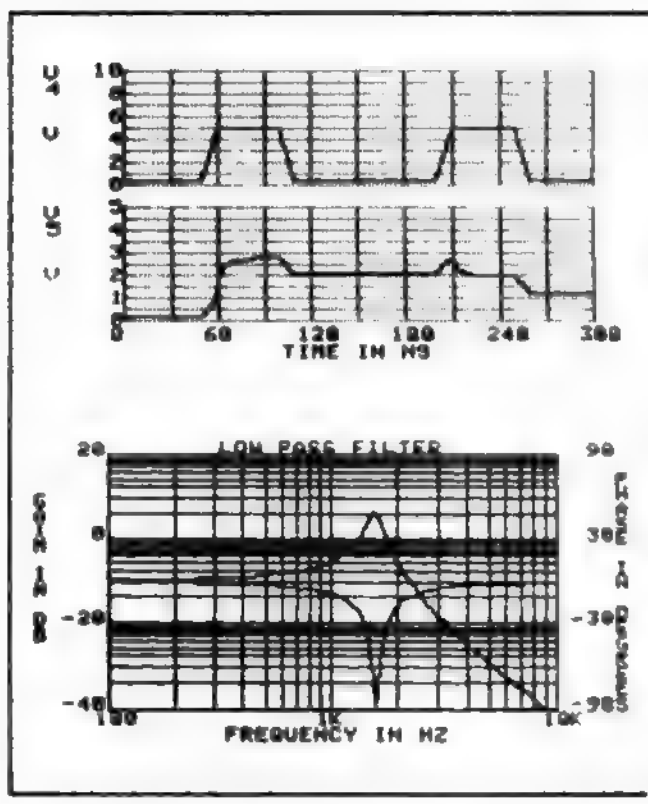


μCAP

Microcomputer Circuit Analysis Program

Tired of trial & error circuit design? Analyze and debug your designs before you build them. With **μCAP** you simply sketch your circuit diagram on the CRT screen and run an **AC, DC** or **TRANSIENT ANALYSIS.** Your circuit may consist of **RESISTORS, CAPACITORS, INDUCTORS, DIODES, BATTERIES, BIPOLAR** or **MOS TRANSISTORS, OPAMPS, TRANSFORMERS,** and **SINUSOIDAL** or **USER-DEFINED TIME DEPENDENT VOLTAGE SOURCES. μCAP** can analyze any such network containing up to 40 separate nodes. Includes a user controlled **MACRO** library for modelling complex components such as **OPAMPS** and **Transistors.**

Typical **μCAP AC** and **Transient Analysis** graphs:



For Apple II (48K) & IBM PC (2 DRIVES) $475.0
Manual & Demo Disk $30.0

ORDERING INSTRUCTIONS: All programs are supplie on disk and run on Apple II (48K) with a Singl Disk Drive or IBM PC (64K) with Single Disk Driv unless otherwise noted. Detailed instruction included. Orders shipped within 5 days. Card user include card number. Add $2.00 postage an handling with each order. California residents ad 6½% sales tax. Foreign orders add $5.00 postag and handling per product.

SPECTRUM SOFTWARE
690 W. Fremont Ave.
Sunnyvale, CA 94087

VISA

FOR PHONE ORDERS:
(408) 738-4387
DEALER INQUIRIES INVITE

3M EYE/JIM EDLIN

The $87.50 Run(around)

3M announces a dubious interim licensing policy for its ASIC Compiler's run-time library.

Would you pay $87.50 to have somebody copy a program that you already own from one disk another? That could be the net effect of recently announced IBM policy for li-nsing its run-time library software used conjunction with compiled BASIC pro-ams.

Here's the background: IBM now sells o versions of Microsoft's BASIC lan-age for the Personal Computer. The "in-'preter" variant is the original. The cen-l portion of the interpreter version assette BASIC) comes built into the ad-only memory of every PC, while the pplementary sections (Disk BASIC and lvanced BASIC) are included when you y PC-DOS. The new variant is the BA-C Compiler that IBM now sells as a sys-ns software product.

Together, these variants provide the st of both major approaches to program-ng-language design. Programs can be veloped, edited, and revised with ease ing the interpreter; once the program is rking as desired, it will run substantial-faster when processed by the compiler. he interpreter translates your BASIC ogram one line at a time into the ma-ine code used by the 8088 processor and peats the translation process each time a ogram loop causes a line to come around ain. The compiler does the translation) for the whole program at one time and lds a ready-to-run machine code ver-n that is used thereafter instead of the ginal BASIC code.)

You have two options when translating BASIC program with the compiler. One oice is to have the program compiled as The other is to take advantage of the n-time library, which provides already-nslated versions of common instruction quences. The run-time library, BAS JN.EXE, is one of several features that ake up IBM's BASIC Compiler package.

BASRUN is loaded into memory side by side with your compiled program. When told to use BASRUN, the compilation process incorporates references to the library into your program instead of generating duplicate code. For single programs, BASRUN is not an important asset. An average program combined with BASRUN comes to about the same size as the same program compiled to work without BASRUN.

BASRUN's big advantage comes into play when you have an interrelated suite of several subprograms that get moved in and out of memory as you put the master program through its paces. BASRUN needs to be on a disk only once to be used by several programs, whereas a suite of programs compiled without BASRUN might be too big to fit on a single disk. BASRUN cuts disk operation time when shuffling subprograms in and out of memory.

Commercial program developers find it desirable to produce compiled programs using BASRUN. However, they cannot casually include BASRUN on program copies they sell, for the same reason they cannot include PC-DOS—the program code belongs to IBM and developers have a license to employ BASRUN for their own use only. Developers cannot expect their customers to have BASRUN since it is presently sold as part of the BASIC Compiler package, a costly product that principally appeals to those who develop programs for sale.

To address this problem, IBM is offering program developers the right to purchase BASRUN licenses for resale. In a letter to developers who have inquired about including BASRUN with their software, IBM says it ultimately plans to offer several options for people who want to resell BASRUN. In the meantime, IBM has a temporary policy under which people can buy ten BASRUN licenses for $350—$35 apiece.

Applying the usual discount policies of the software business, providing margins for both distributors and dealers, the $35

One Company's Solution

Clipping coupons for BASRUN bargains.

One company that recently wrestled with the BASRUN question is International Software Marketing, Inc. (ISM), the Syracuse, New York firm that publishes the *Mathemagic* and *Graphmagic* programs.

Mathemagic, a program that assists in the manipulation of mathematical formulas, would not fit on a single disk when compiled without using BASRUN.EXE, and its operation was too slow to be satisfactory when run in its interpreter-BASIC form. *Mathemagic* has a suggested retail price of $99.95. Rather than nearly doubling the price of his program or dealing with the bother of offering versions with or without BASRUN, ISM President Stephen Brightbill decided to tread a middle ground. He decreed that ISM products for the PC, that use compiled BASIC, will be compiled to use BASRUN.EXE but will be sold without including IBM's file on the disk. Every package will include a coupon that customers can use to buy BASRUN.EXE from ISM by mail for $50.

"No matter where people buy our programs, we will invite them to buy BASRUN directly from us," says Brightbill. The $50 price is designed to compensate ISM for handling expenses while minimizing the burden on software buyers. —*J.E.*

ChequeMate™PLUS. So versatile it can outgrow your home.



A new home financial program that grows from your home to your business.

Our new ChequeMatePLUS is so complete you'll have to take it to work to find new things for it to do. It's the ultimate home financial package and you can buy it for IBM's Personal Computer as well as Apples.

ChequeMatePLUS will handle your checks, charge cards, cash control and automated teller transactions.

And here's the Plus!

It can handle budgeting of Assets & Liabilities in addition to Income & Expenses. It'll give you Tax Category Accounting, Missing Check Warning and Trend Analysis.

In addition, the ChequeMatePLUS IBM version offers full use of Function Keys and is redesigned to take advantage of IBM hardware capabilities.

- Budgeting with actuals
- Multiple categories per check
- Multiple Checking Accounts
- Easy Screen Dumps
- All Data Accessible for Change
- Reports plus more —

ChequeMatePLUS: It's part of Masterworks' revolutionary Software line.

Masterworks Software, Inc.

(213)539-7486.

master charge

25834 Narbonne Ave.
Lomita, California 90717

VISA

m bought by the program developer will marked up to add $87.50 to his pro-
ım's retail price, assuming the program veloper won't charge anything to cover handling expense.

The $87.50 added to the price of your it compiled BASIC program may be inently worthwhile, because it adds .SRUN to your software library. But will ı want to pay $87.50 again the second

ONE OBVIOUS solution is to sell BASRUN directly to consumers.

ıe you buy a program using compiled ,SIC, considering that you can copy the ,SRUN file from your previous pur-ase? Probably not. This raises the spec- of program developers having to sell ɔ versions of a program—one with BAS-JN and one without. You can be sure s duplication will raise software prices. One obvious solution would be to sell .SRUN directly to consumers, who can ın copy it to purchased programs as eded. This is the way PC-DOS is now ndled. Another solution that recognizes ı convenience of having BASRUN al-ıdy in place on every disk where it is eded would be to slash BASRUN's ce and hope to come out even via multi-ı sales. But the current, admittedly tem-ɔary policy should be very temporary leed. Charging people who buy two or ıre commercial programs using the .SRUN library more than once for the ne product is unfair. */PC*

itor's Note:

ıen we contacted IBM at press time, ɣ informed us that our article reflects ı temporary service they are offering to ɔgram developers and users, and that ɣ are currently preparing new terms :l distribution procedures that offer sig-icant flexibility and benefits.

IBM said that the changes are immi-nt and that the procedures would be re beneficial to program developers n users.

WOW!

TP-1 Letter Quality Daisy Wheel Printer
SMITH-CORONA $595

64K or 256K + RS232 + Flash Disk for IBM PC
SEATTLE BOARD $299/$499

64K or 256K Quadboard + RAM Disk for IBM PC
QUADRAM $435/$650 (64K Micro Fazer $219)

New! Smartmodem 1200
HAYES $545 (Smartmodem 300 $215) (Micromodem II $279)

EPSON
MX-80T Type III w/graphics $445
MX-80F/T Type III w/graphics $519
MX-100 Type III w/graphics $669

NEC
7710/7730 Spinwriter (55CPS) $2285
3550 Spinwriter (33CPS) $1750
12" Green Screen Monitor $ 169

OKIDATA
Microline 82A $ 439
Microline 84 $1025

TANDON
TM100-2 $275
TM 848-1 $380 TM 848-2 $495

AMDEK
12" Green Phospher $159
13" Color II RGB $699

C. ITOH
PROWRITER 2 ($699P/$750S)
PROWRITER ($499P/$599S)

64K RAM CHIPS Hitachi, Fujitsu, NEC, etc.
8-25 $7.95 ea./ 26-49 $7.50 ea./ 50-99 $7.25 ea.
100-199 $6.95 ea./ 200-499 $6.50 ea./ 500+ CALL

MICRO PRO

Wordstar	$269
MailMerge	$ 89
SpellStar	$139
DataStar	$195
SuperSort	$149
CalcStar	$169

VISICORP

Visicalc	$185
Visitrend/Plot	$225
Visipak	$499

SORCIM

Supercalc	$199

ASHTON-TATE dBase II $479

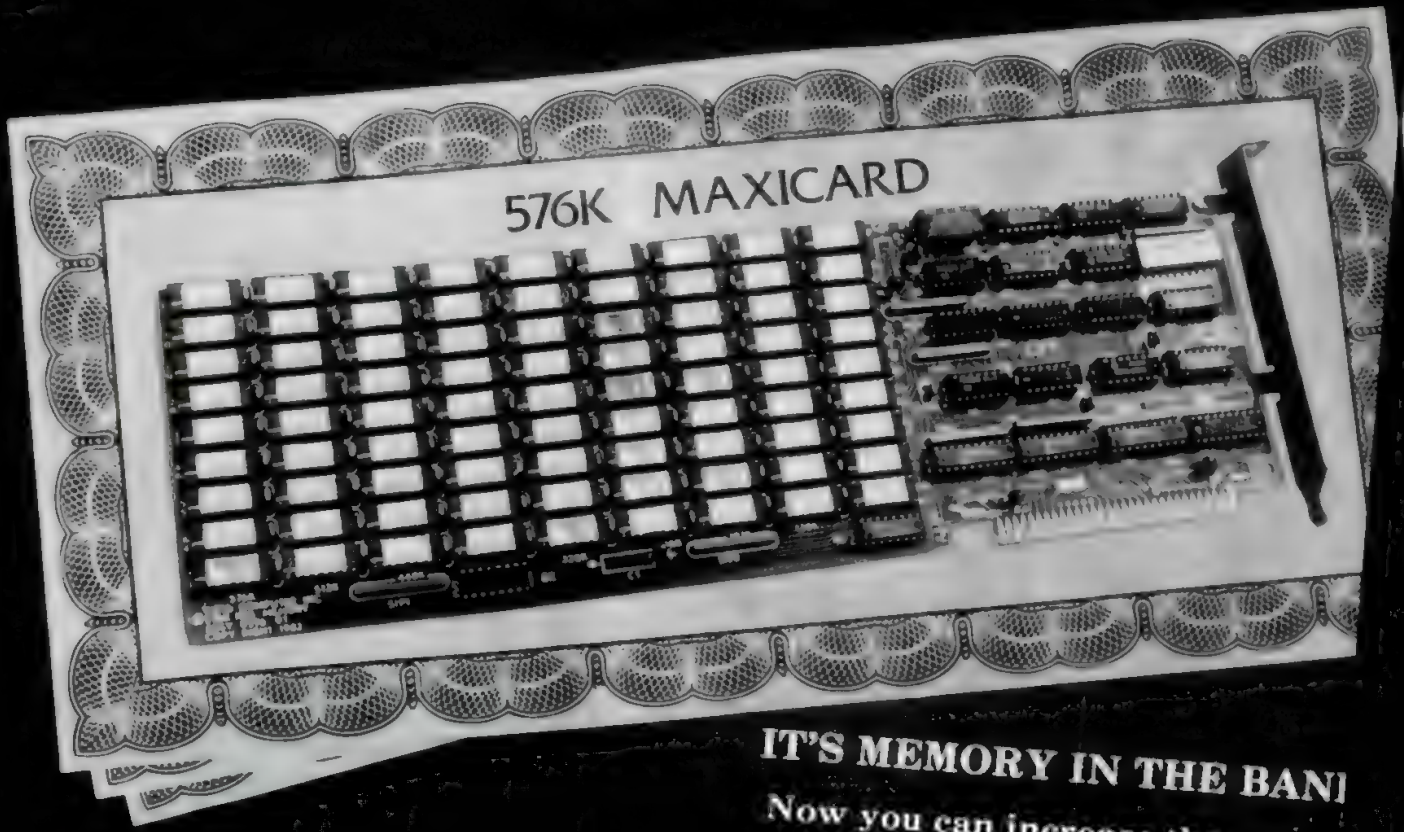
Fast Delivery! From Atlanta Warehouses!
CALL COLLECT TO ORDER! 404-449-8149

MICRO MART
6889K Peachtree Ind. Blvd.
Norcross, GA 30092

INFORMATION: 404-449-8089

IBM Announces 576K Capability for the IBM PC

Buy Vista and put Stock in IBM



IT'S MEMORY IN THE BANK

Now you can increase the memory equity of your IBM™ personal computer with Vista's 576K MAXICARD. Hold an option on your memory needs; with the Maxicard in your portfolio you can add up to 576K* dynamic RAM to your system as you need it, when you need it.

Assets include a four-layer board design for reduced noise, on-board parity bit, switch-selectable addressing, full-speed operation with no wait states and much more.

Vista lets you capitalize on the many features of the IBM personal computer by giving you the most flexible margin on memory around. Just buy Vista and watch your investment grow.

Vista 576K MAXICARD

Special Trial Offer

192K configuration
reg. $645.00 NOW $499.00
offer limited

Contact you local dealer, or call our Vista HOTLINES.

*expandable in 64K increments)
IBM personal computer is a registered trademark of IBM.

Vista COMPUTER COMPANY, INC.
1317 E. EDINGER
SANTA ANA, CA 92705
(714) 953-0523 (800) 854 80[illegible]

Copyrighted material

hen price is consideration Consider us!

VisiCalc (256K) only $179.

software exclusively for the IBM-PC

We carry ALL available IBM-PC software.

Intersoft's Hit Parade

WORDSTAR $269
MAILMERGE $79
HOME ACCOUNTANT PLUS $109
PEACHPAK SERIES 4
accounts payable
accounts receivable } $359
general ledger

VISIDEX $179
dBASE II $499
EASYWRITER II $249
SUPERCALC $189
TIM III $279
EASYFILE $309

master charge THE INTERBANK CARD

C.O.D.
Check
Money-Order

VISA

Add 2% for shipping and handling.
N.Y.S. residents add sales tax.
20% deposit for C.O.D. orders.

VisiCalc is a trademark of VisiCorp
WordStar is a trademark of Micropro
Home Accountant Plus is a trademark of Continental Software
EasyWriter II is a trademark of Information Unlimited
SuperCalc is a trademark of Sorcim
TIM III is a trademark of Innovative Software
MailMerge is a trademark of Micropro
Deadline, Zork I, and Zork II are trademarks of Infocom
Temple of Apshai is a trademark of Automated Simulations
Las Vegas Blackjack is a trademark of Quala

NTERSOFT

Garden City Plaza, Garden City, N.Y. 11530

Toll-Free Order Hotline:
1-800-645-3491 continental U.S.
516-741-0043 N.Y.S.

IN SEARCH OF A WORD PROCESSING PROGRAM

So you've decided to purchase a word processor. Offered here are some practical questions to ask yourself before taking the word processor plunge.

Don't be in a big hurry to pick a word processing program. Once they have made the choice, most people don't change programs even if a better one comes along. It seems easier to stick with one they already know.

The first step in selecting a word processor is to think about how you will use it. Will you be writing a few long reports, many short letters, editing copy for a newsletter, preparing mass mailings, or assembling legal documents from prewritten paragraphs? The second step is to try the software. Run a few experiments; count the number of keystrokes needed for common functions; test it with some typical tasks. Following are a few tions to ask while evaluating a pro

How Fast Is Basic Editing?

Most word processing time is spe tering and revising text, so the spe simple operations such as scrolling, movement, searches for simple pa insertion, and deletion is critical. O to ascertain word processor speed is ate a test document and try a few ments. I created a 10,000-character ment and performed the followin using two different word proc While a quick experiment like this w you a lot, raw speed is not the whol



re 1 gives results.

v Convenient Is Basic Editing?

Convenience and the number and de- of simple editing functions may be important than speed. Does the cur- rack the text instead of going off into ty space? If it does track editing, it will ster, although perhaps confusing to a nner. Will one or two keystrokes move cursor to the beginning or end of the ent line and to the first or last line on screen? Is word wrap handled proper- hen you insert and delete text? When ecting errors, you'll make constant use e simple search for a pattern, but how

Figure 1: Test Results of 10,000-Character Document

FUNCTION	PROGRAM 1	PROGRAM 2
Scroll to end, by lines	33 seconds	38 seconds
Scroll to end, by pages	23 seconds	4 seconds
200-character cursor move	29 seconds	19 seconds
Search to end of document	21 seconds	1.4 seconds
Keystrokes for simple search	7	2

many keystrokes does it take to give the command?

The best way to determine convenience is to spend some time using the program. After a half hour you will know where the frustrations are hidden. Make sure your test document is fairly long since nearly any system will seem easy when you are working on a single paragraph.

Is the Command Structure Consistent?

Consistency is important. If the control key is used to "amplify" one command (turning a word delete into a line delete, for example), it should be used to amplify all commands. Consistent conventions should also be used in moving from one mode or menu to another; if function key 10 loads the main menu from the print mode, it should also load the main menu from the margin setting mode.

How Are Complex Editing Functions Handled?

Simple functions are used for everything you do. More complex functions such as block operations and complex searching and replacement are used less frequently, so they might be less convenient to invoke. It should be simple to do simple things and possible to do complex things. Those who write only short, unique letters will seldom need these features and should put little emphasis on them.

Find out what the program can do. They can all move and copy blocks, t can the test program make multi copies, print a block, write it to the disk, erase it? In searching for patterns, can y specify such things as searching for wh words only and treating uppercase lett properly at the start of a sentence?

Do you work with columnar reports? so, look for a program that can line up c umns of figures, do arithmetic, and mo columns (not the same as moving block

Convenience is also a factor here. H many keystrokes are required to mark a copy a block? Once a block is marked, h difficult is it to find it or to move the blo markers? Again, try a test.

Does it Support Document Assembly?

Word processors are often used to a semble documents from prewritten ma rial. An attorney might prepare wills a deeds, for example, or a politician mig answer letters from constituents by strin ing together selected "boiler plate" par graphs. If you have this sort of applicatio look at document assembly features su

IBM COMPATIBLE BOARDS

BY ZOBEX

256 K MEMORY WITH PARITY
ONE YEAR WARRANTY $598

HARD DISC SUBSYSTEM FOR
IBM AND S-100 $1899

2SP WITH 2 SERIAL PORTS $199

ZOBEX

7343 J. RONSON RD.
SAN DIEGO, CA. 92111
(714) 571-6971

ZOBEX is trademark of ZOBEX CORPORATION
IBM is trademark of International Business Machines Corporation

the ability to include text from other s on disk. To save disk space, you uld need only a reference to the file. If actual text must be included, you will ste disk space every time the text is d.

Most word processors will include an ire file, but can they include a portion a file? Can you create menus to guide operator in selecting paragraphs for ertion? The search command might be d to find blank spaces in a standard cument, but is it fast and can it be re- ated with a single keystroke? When mparing, try out programs by using a cument assembly task that reflects your plication.

hat Happens When Memory comes Full?

Simple word processors work only with cuments that fit entirely in memory. at is satisfactory for writing short let- s, but it won't do for a novel. Assuming t the program can handle documents ger than memory, does it read them automatically from the disk or must you give an explicit command to read or write each portion?

How Big a Document Will Fit in Memory?

This question is related to the one above. Even if the program handles oversize documents automatically, it will slow down whenever the disk is accessed. If you work with large documents, one of your first experiments should test how large a document will fit in memory. Then build a larger file and try a few more scroll-timing experiments such as those suggested earlier. Check to see how long it takes to jump from the start of the document to the end and then back to the start.

If you like a program but the document space is too small, you might be able to increase it by adding more memory to the computer. Many programs have a modest upper limit on document space regardless of the amount of memory installed in the computer. Look for a word processor that can use all the PC's memory.

How Fast Are Transitions Between Editing and Printing?

Some word processors keep editing and printing programs in memory at all times, so moving to print mode is instantaneous. In others the document being edited must be saved on disk, and a separate printing program must be loaded. Some programs even return control to the DOS between these phases. Between these extremes are systems in which the document remains in memory, but the printing routine must be read in from the disk.

The faster transitions of the first technique sound great, but if the printing program is always kept in memory, there will be less space for other things. Either document size will be limited or some editing functions must be omitted.

How important are these transitions? Do you typically work on many short documents or a few long ones? If your documents are short, a system in which the editor and print programs are both in memory would probably be best for you, since you won't need a large document area and

The Man — Machine Interface ...

... The All-Important Connection

ALS

Whether you are developing programs or writing books, you need productivity. IBM* knows that, that's why they developed SPF for their big mainframes. And now, ALS* offers the same power for your micro computer.

ADVANCED PRODUCTIVITY SYSTEM

- A Full-Screen Editor Similar To SPF
- Dual Screen Support
- A Separate Browse Subsystem
- Integrated Utilities
- Tag-Driven Text Processor
- Menu-Driven, General Purpose Dialog Manager

For information, call or write to:

ARRIX LOGIC SYSTEMS INC
P.O. Box 142
Don Mills, Ontario
Canada M3C 2R6
(416) 292-6425

*) IBM is a Trade Mark of International Business Machines Corp
ALS is a Trade Mark of Arrix Logic Systems, Inc

you'll go through the edit/print cycle often. If you work with long documents, edit/print transitions are infrequent, so it doesn't matter if they are a bit clumsy.

How Convenient Is Simple Formatting?

All word processors provide for control over the basic format of the page, and most printing will be done using standard default values for such things as margin sizes, page numbering, justification, and line spacing. How many keystrokes are necessary to start printing when you use the default values? How difficult is it to override them (to cause double spacing instead of single spacing, for example)? How difficult is it to change the default values permanently?

Does the Program Do On-Screen Formatting or Use Embedded Commands?

On-screen formatting seems best at first; it is conceptually simpler because what you see on the screen is exactly what will be printed. You will have no surprises such as a letter in which the second page says nothing but "Sincerely yours." Th are some problems, however. Many fects cannot be shown exactly, so in rea word processors must use some embed commands. Furthermore, on-screen matting slows you down while you are ating and revising your document. It ta time to reformat paragraphs after t have been modified and to mark spe portions of the text. The value of on-scr formatting will vary with application. author who does a lot of writing and t prints out a rough draft may not want sacrifice editing speed.

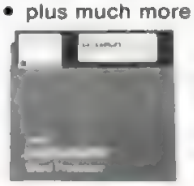
THE Benchmark® Word Processor

IBM PC + The Benchmark = GREAT WP!

DEMAND A COMPARISON!

- FASTER—Native 8088 Code.
- EASIER—Menu oriented with plain English commands.
- MOST FUNCTIONAL—Designed to fill the needs of the high production office.
- MOST FEATURES—Has features to satisfy even the most discriminating user.

FEATURES: Full utilization of the PC • Horizontal Scroll • Business Graphics • Math • Footnotes • Keyboard Phrase Library • Sophisticated Boilerplate Assembly with Auto Variable Fill-in • Column Manipulation • Hyphenation Scan • plus much more . . .



Call or Write:
Metasoft Corporation
711 E. Cottonwood, Suite E, Casa Grande, Arizona 85222. Telephone (602) 836-6160.

THE BEST programs allow you t create special prompts.

Can It Format Repetitive Documents?

Will you be using your word proces to prepare repetitive documents? If you'll want a system that lets you creat template document with blank spaces be filled in automatically, using valu from a file on the disk, or manually, us values entered by an operator as the lett are being printed.

Many systems are unable to format petitive documents. Others can merge v ues from data files but are not able to cept operator input during printing. T best programs allow you to create spec prompts to guide the operator and to c ture and store the data entered. Pay att tion to programming features such as c dition testing. Can the system print o letter as well as an entire mailing?

What Are the Report Formatting Features?

Do you write formal reports with s tion headings and footings, fancy pa numbering schemes, footnotes, index and tables of contents? If so, check to s whether these things are possible. The are somewhat specialized capabilities, you should be willing to put up with so complexity to get flexibility. Be sure to the system using the report format y plan to use. If you want footnotes that f

CP/M® IBM® APPLE® PRICE WAR!

WordStar®	dBASE II™	SuperCalc™	Perfect Writer™	VisiCalc®
$249	**$489**	**$189**	**$249**	**$189**
WordStar® dBASE II™	**WordStar®/ MailMerge™**	**EasyWriter II™**	**TCS Accounting™**	**SuperWriter™**
$695	**$309**	**$269**	**$289**	**$249**

NOW, PAY LESS, AND GET GREAT SERVICE, TOO!

If you're looking for rock-bottom prices *and* fast, ersonal service, take a close look at 800-SOFTWARE.

Because we buy in volume, we're able to sell the roducts you want at prices that finally make some ense. But don't take our word for it. Compare prices nd see for yourself!

OUR SERVICE CAN'T BE BEAT.

We take care of you like our business depends on it. ecause it does.

When you call 800-SOFTWARE, you get the fastest elivery available anywhere. Which means that every rder is filled the day we get it. And that our unique Order Tracking System™ is on the job, keeping tabs on your order, every step of the way.

Our giant inventory—one of the largest in the United States—also assures you of the fastest possible service. Everything's in stock so you don't have to wait.

Technical support? Business software expertise? We've got it—and it's the best you'll find *anywhere*.

But, put us to the test. Let us prove what we've proven to satisfied customers around the world.

That our prices *are* lower. That our service *is* better. That there really and truly *is* a difference.

We look forward to your call.

CUSTOMERS TELL OUR STORY BEST!

"I have been very favorably impressed with your rompt and efficient service and excellent prices."

Peter Sereny, M.D., West Hartford, Connecticut

"Rarely today do I have the opportunity to deal with a irm which shows such a high degree of professional ability. Aloha."

Joe Neil, Lihue, Hawaii

"It is indeed refreshing to deal with people as personable and professional as you have proven to be."

Dave Turner, U.S.N., Lubbock, Texas

"Thank you very much for the very prompt service you gave me."

William Drescher, Lansing, Michigan

All letters on file.

O ORDER, CALL TOLL-FREE:
800-227-4587
n California, 800-622-0678
A residents add sales tax.
R WRITE: 800-SOFTWARE, INC.
85 Berry Street, Suite 6820
an Francisco, CA 94107

- ☐ Purchase orders accepted
- ☐ Prompt UPS 3 day Blue Label service
- ☐ Call for shipping charges and our other low software prices.
- ☐ Now open Monday through Saturday.

800-SOFTWARE

VISA MasterCard AMERICAN EXPRESS

FREE GIFT!

GET 4 FLOPPY DISKETTES FREE WITH ANY PURCHASE, IF YOU ACT NOW!

- ☐ Your choice of 5¼" or 8"
- ☐ Brand new and brand name

© Copyright 800-Software, Inc. 1982

We Display Low Prices . . .

Apparat continues to expand our line of IBM compatible products. Buy a minimum IBM system from any dealer, then look to Apparat to complete and expand it. And save about 25% over a comparable system.

- **Add-On Memory Card.** Uses 64K dynamic RAM chips, with parity. All are expandable to 256K. 64K –**$299**, 128K – **$399**, 192K – **$499**, 256K – **$599**.
- **Monitors.** High quality, reliable, 12 inch green screen. NEC, 20 MHz BW – **$195**. Amdek, 18MHz BW and anti glare – **$180**.
- **Printers.** A variety of the newest Epson, NEC and Okidata printers available. Call for prices.
- **48K Additional Ram.** 27 chips plug easily into master PC board – **$75**.
- **RGB Color Monitors.** Includes cable and modification to enable 16 colors – intensity control. NEC –**$995**, Amdek – **$899**.
- **Prom Blaster.** Programs most 4K to 64K bit 24 PIN EPROMS. Complete with personality modules and read/write software – **$129**.
- **Home Finance.** Easy to use checkbook & budget manager—**$34.95**
- **Apparat Game Diskette.** Includes blackjack, othello, matches and spiralgraph – **$24.95**.
- **Combo Card.** Adds parallel printer, RS 232 asynchronous communications and clock calendar functions. Uses only one slot – **$199**. RS 232 Cable – **$24.95** Parallel Printer Cable – **$29.95**.
- **Clock Calendar Card.** Features seconds, minutes, hours, day of week, date, month and year. Battery backup maintains time and date even when system is turned off. Software compatible with PC DOS – **$99**.
- **Prototype Card.** 3.5 by 8 inch wirewrap area holds over 85-14 pin dips – **$29.95**.
- **64K Byte Hardware Print Spoolers.** Internal spooler comes with parallel printer adapter. External version connects easily between computer and printer. Both buffer 32 pages of print output and are user programmable – **$319**.

IBM compatible add-in and expansion drives.

- **Single and Double sides 40 track drives.** Both drives (Tandon or CDC available) are fully supported by PC DOS version 1.1 and you can mix or match. Drives are easily installed in minutes. Single sided (160K) – **$225** each, Double sided (320K) – **$315** each.
- **Double sided 80 track (650K) Tandon drive.** Requires software patch – **$435**.
- **Expansion cabinet for 3rd and 4th drives.** Any of the IBM compatible drives above are easily mounted into the matching case. Power supply and cable included – **$275**.

With 2 dual 40's internally and 2 in the expansion cabinet you have over 1.2 megabytes of storage online and supported by an unmodified PC DOS 1.1.

Apparat, Inc.

See us at Booth 1380
COMDEX
Nov. 29-Dec. 2, 1982

VISA MasterCard

4401 S. Tamarac Pkwy. • Denver, CO 80237 • (303) 741-1778 • (800) 525-7674

Freight F O B Denver-call for shipping charges Foreign Orders shipped Air Freight

oss adjacent pages and are separated n the body of the text by a row of hes, make sure that sort of flexibility is ered.

n It Do Fancy Printing?

Many printers have the following fea-s: boldface, underlining, superscripts, scripts, overstriking, proportional racter spacing, and precision control r line and character spacing. The last items are particularly useful if you n to prepare high-quality documents final copy to be pasted up and printed. hese effects are important to you, check e sure that the software supports them. n't just read the manual or ads—try m out with your printer.

n the Program Be Copied?

The problem with copy protection is t there are legitimate reasons for copy-software. If you want to make backup ies, have data on several working ks, or put it on a hard disk, you will nt a program that can be copied.

t Compatible with Other ftware?

Some auxiliary programs are related to rd processing. If you plan to use spell-checkers, report formatters, or style ckers, for instance, do they work prop-with your word processing files? You y also plan to use your word processor files created by data management or eadsheet programs. Are you thinking of ng it with communications files or to pare programs to be compiled? If so, tests to make sure its file structure is mpatible with your other software.

the Documentation Difficult to arn to Use?

Good documentation will ease the pain learning a new system, and consistently ganized commands, Help screens, and mmand menus will make it go faster. ke sure you can get rid of the Help eens and prompts once you have rned the system. A simple system that s few features will be easier to learn n a sophisticated one.

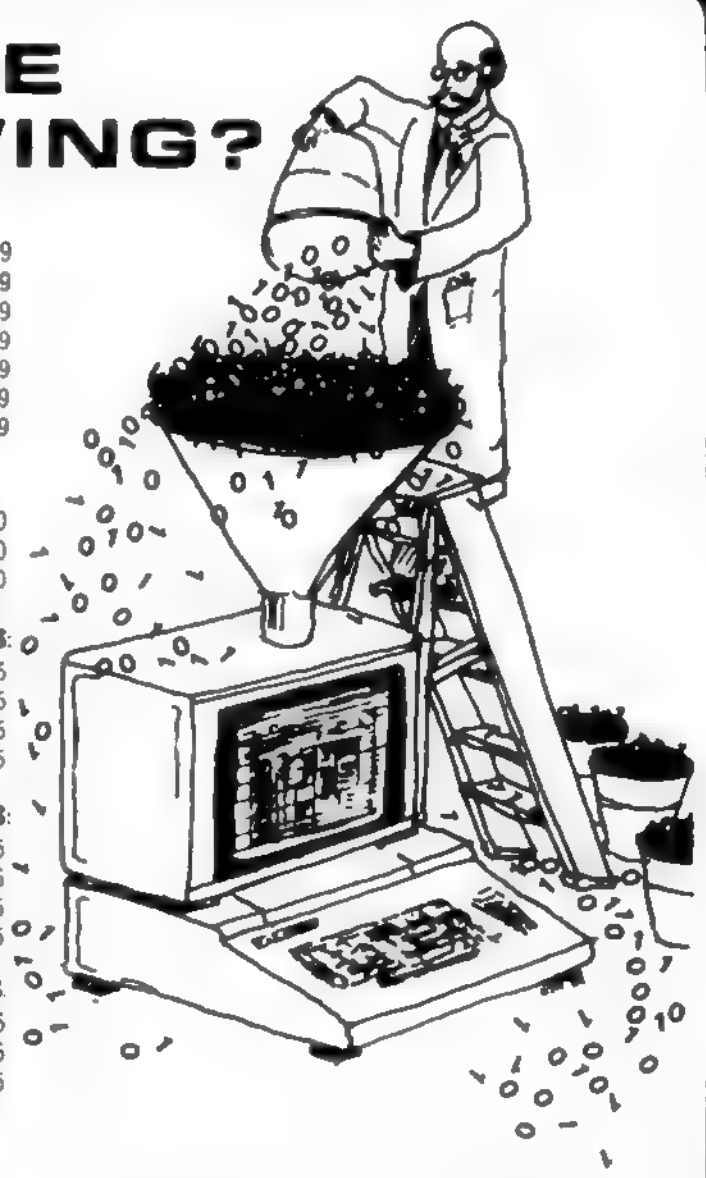
the Documentation Acceptable?

This question refers to printed docu-ntation—the manual and reference d. In evaluating these materials, be sensitive to your background. If this is the tenth word processing program you have learned to use, nearly any manual will do for tutorial purposes. But if you are a beginner, the manual should be clearly written, full of examples, and provide sample files and lessons on disk. It should be a useful reference document with a good index and appendixes.

What Format Is Used for the Directory and Text Files?

Most word processing programs use the directory structure of the computer's operating system. If that is the case, operating system commands may be used for displaying the directory and copying, renaming, and deleting files. That is convenient, but be sure you can do these things while editing. If you discover that the disk is full and you can't save your work, you must be able to display the directory and delete unneeded files. Automatic renaming, the creation of a backup copy when you revise a file, is another feature that you should look for. */PC*

STORAGE OVERFLOWING?



IBM-COMPATIBLE MEMORY BOARDS

IRM-64C	64K Complete Memory Board	169
IRM-64X	64K Expandable to 256K Memory Board	199
IRM-128X	128K Expandable to 256K Memory Board	299
IRM-192X	192K Expandable to 256K Memory Board	399
IRM-256C	256K Complete Memory Board	449
IRM-256X	256K Expandable to 512K Memory Board	499
IRM-512C	512K Complete Memory Board	799

SIRIUS/VICTOR-COMPATIBLE MEMORY BOARDS.

SVM-128X	128K Expandable to 384K Memory Board	450
SVM-256X	256K Expandable to 384K Memory Board	650
SVM-384C	384K Complete Memory Board	900

IBM-COMPATIBLE 5¼" INTERNAL FLOPPY DISK SYSTEMS:

IIFD5-640	640K Two Drives	575
IIFD5-800	800K Two Drives *	595
IIFD5-1280	1280K Two Drives	775
IIFD5-1600	1600K Two Drives *	795

IBM-COMPATIBLE 5¼" EXTERNAL FLOPPY DISK SYSTEMS:

IEFD5-640	640K Two Drives	975
IEFD5-800	800K Two Drives *	995
IEFD5-1280	1280K Two Drives	1275
IEFD5-1600	1600K Two Drives *	1295

IBM-COMPATIBLE 5¼ INTERNAL HARD DISK SYSTEMS

IIHD5-6M	6MB One Drive	1595
IIHD5-12M	12MB One Drive	1995
IIHD5-18M	18MB One Drive	2395

IBM-COMPATIBLE 5¼ EXTERNAL HARD DISK SYSTEMS

IEHD5-6M	6MB One Drive	1895
IEHD5-12M	12MB One Drive	2295
IEHD5-18M	18MB One Drive	2695
IEHD5-40M	40MB One Drive	3695

IBM-COMPATIBLE 8 THINLINE EXTERNAL DISK SYSTEM

ITED8-2	2.4MB Two Drives	1595

IBM-COMPATIBLE 5¼" AND 8" CONTROLLER BOARD W/CABLE

IC5/8C	Usable for Both 5¼" and 8" Disk Systems	175

IBM-COMPATIBLE MULTI-FUNCTION BOARDS:

IMF-APGC-0	Async Printer Port, Game Adapter Clock Calendar	225
IMF-APGC-64	Above functions with 64K Memory	495
IMF-APGC-256	Above functions with 256K Memory	750

IBM-COMPATIBLE SERIAL COMMUNICATIONS BOARDS:

ISCSA	Serial Board, Single Line Async	95
ISCDA	Serial Board, Double Line Async	125

Prices subject to change

*Includes software to give 10 sections per track support
Also has Ram Disk and Printer Spooling Facility

INCREASE YOUR IBM-PC CAPACITY WITH cti ADD-ONS

Computer Technology Innovations
Div. of Univation, Inc.
1037 N. Fair Oaks Ave., Sunnyvale, CA 94086
(408) 745-0180 TWX: 910-379-0029
TLX: 171627

cti

Interested in the IBM Personal Computer?

If you're interested in the IBM Personal Computer then you need PC magazine.

PC magazine is the Independent Guide to IBM Personal Computers. Each issue is packed with information for everyone interested in IBM Personal Computers.

PC magazine tells you how to put together the best IBM "PC" system and then how to get the most out of it. Each issue brings you hundreds of colorful pages of evaluations, insights, and straight talk from respected experts—professionals in computer science as well as writers, businessmen, lawyers, educators, and many others.

PC covers software, hardware, applications and most every topic of importance to the thousands of IBM Personal Computer users who read it. To ensure that we give you the information you need, PC includes a special "User-to-User" section, as well as a "PC Wish List", and news about IBM Personal Computer clubs, events and publications.

For a limited time, you can subscribe to PC at NO RISK and still receive a 25% discount off the newsstand price. Enter your subscription now. If not fully satisfied when you receive your first copy of PC, simply return your mailing label within 15 days for a full refund.



This is the magazine that tells you all about it.

Name _____

Address _____

City _____ State _____ Zip _____

☐ 6 issues/$14.50 ☐ 12 issues/$27.00 ☐ 24 issues/$46.00

☐ Check enclosed ☐ VISA ☐ MasterCard ☐ Bill

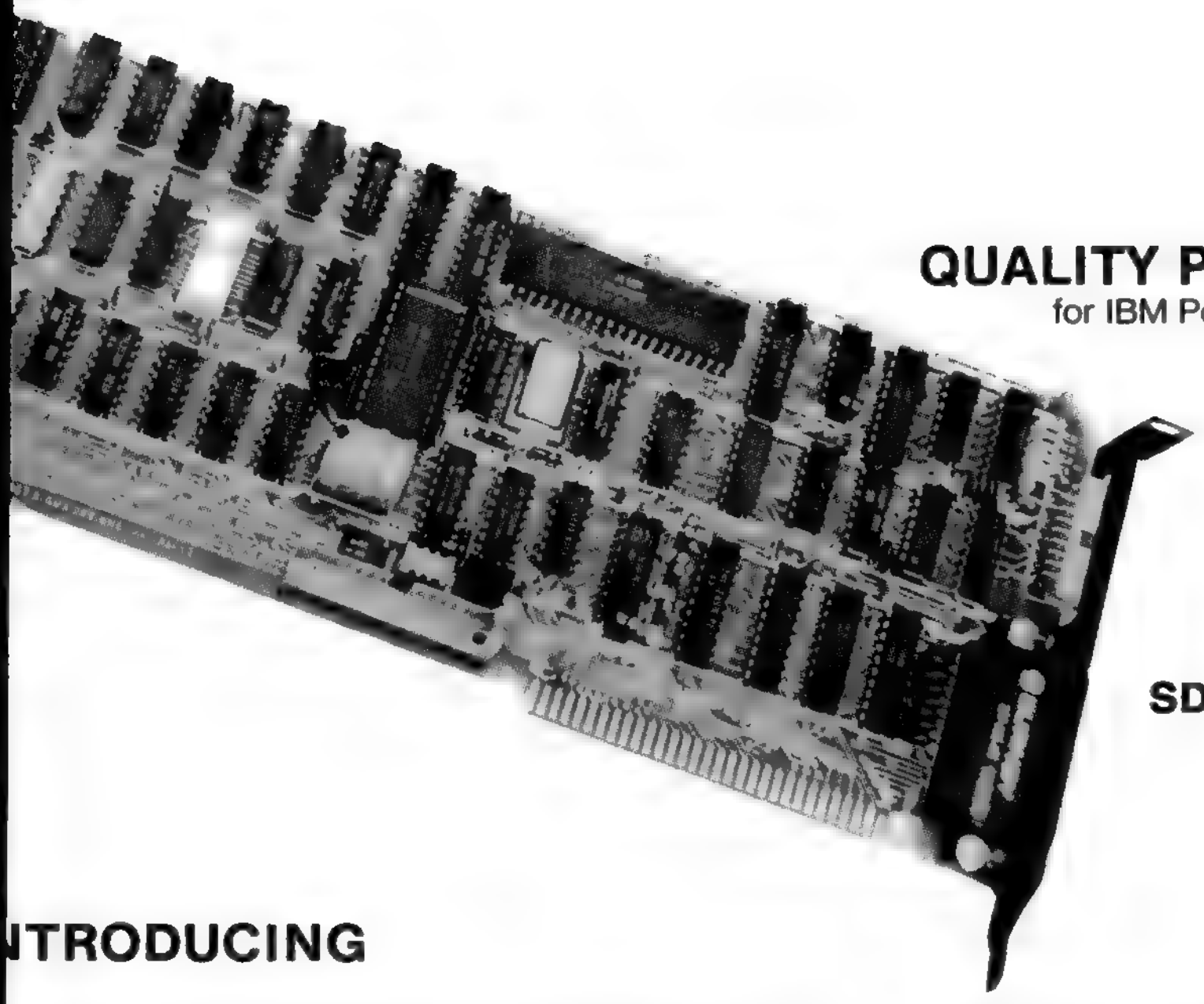
Card # _____ expires _____

☐ I already own an IBM "PC" ☐ I am thinking about buying o

Dept. P7
PC Magazine
1528 Irving St.,
S.F., CA 94122

Phone Credit Card Orders to:
(Toll Free Number)
California: 800/792-0990, ext. 1136
All Other States: 800/227-3800, ext. 1136

DESIGNS
inc.



QUALITY PRODUCTS
for IBM Personal Computer

SDI - SSC+MEMORY

NTRODUCING

SYSTEM SUPPORT CARD+MEMORY

ore functions than any ards available
Clock Calendar, Game Adapter, Printer/Parallel Port, Async Port, plus 256KB memory max

ock/Calendar
Battery back-up • External alarm output when shut-off • Software o set system Date & Time

me Adapter
Dimensions, 4 Keys
Adapter cable included

Printer/Parallel Port
- Jumper select to either function
- Addressable to two locations
- IBM hardware and software compatible

Asynchronous Port
- RS232 and 20ma current loop
- Addressable to two locations
- Adapter cable to PC back plane included

Memory
- 64KB expandable to 256KB
- Parity checking
- Addressable to any 64K boundary

Cost Competitive

SDI-SSC+MEMORY	
W/64KB installed	$575
w/128KB installed	$725
w/192KB installed	$875
w/256KB installed	$975

OTHER PRODUCTS AVAILABLE

DI-SSC **$295**
stem Support card without memory

DI-Floppy **$220**
ppy disk drive interface board

DI-Floppy+Clock **$265**
ppy disk drive interface board with clock

DI-256+Async
emory board with nc Port
w/64KB **$445**
w/128KB **$595**
w/192KB **$745**
w/256KB **$845**

SDI-256
Expandable Memory board
w/64KB **$295**
w/128KB **$445**
w/192KB **$595**
w/256KB **$695**

SDI-64 **$195**
Non expandable 64KB Memory

SDI-9x64 **$150**
64K expansion chip set

SDI-PROTO **$55**
Protoyping Boards

SDI-MiniProto **$30**

All board available now
One year warranty
Dealer inquiry welcome

SIGMA DESIGNS INC.
P.O. Box 3765 - 3866 Eastwood Cr.
Santa Clara, CA 95055-3765
(408) 496-0536

More than just storage... Solutions!



20 or 40 Megabytes integral to the PC—not an add-on box.

Runs CP/M™ and CP/M 86™ programs under PC-DOS.

Among the many software programs available are: Accounting Plus' Integrated Accounting System, Micronetics' Client Write-up General Ledger, SuperCalc Financial Modeling Tool, Legal Tender Legal Time Billing System, Medical Billing Software, TM III Data Base Management Systems, Project Management, and more.

Need we really say more?

Professional Micro Systems

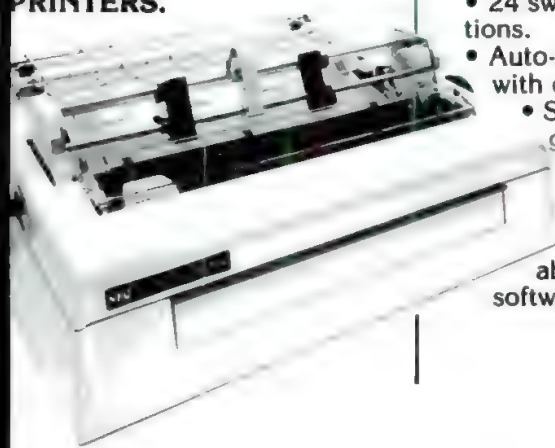
1422 Industrial W
Gardnerville, Nevada 894
(702) 782-81

© 1982, Professional Micro Systems, Gardnerville, NV (6/15/
Note: CP/M and CP/M 86 are trademarks of Digital Research.

3 Choose from Intelligent Printers for your IBM Personal Computer

The NEC Spinwriter is an excellent printer. But you need more— More interfacing choices, more RAM buffer, and more word processing features. So we installed a specially designed interface and renamed the printer SELLUM I. For the past 2 years it's been outselling all expectations.

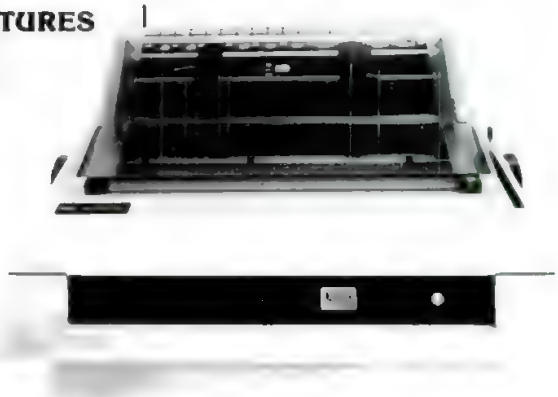
Now you have 3 choices of printers based on the NEC Spinwriter Series, and the Fujitsu. All perform beautifully with the IBM Personal Computer. They're the **SELLUM SERIES PRINTERS.**

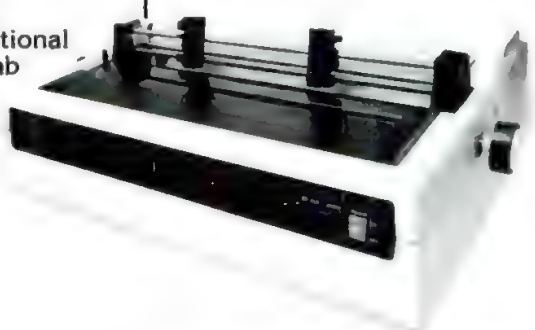


OUTSTANDING FEATURES

Select from either of these fine printers, and enjoy many bonus benefits, such as

- 16K RAM or 48K RAM option.
- 16 baud from, 50-19,200,—hardware/software selectable.
- RS-232, Centronics Parallel, IEEE ports, Current Loop.
- Switch selectable protocols: NEC 3510, Diablo 630, Qume Sprint 9.
- 24 switch selectable functions.
- Auto-bidirectional printing with optimized throughput.
- Sheetfeeder and graphics modes.
- Auto proportional spacing and tab setting.
- Upgradable to latest software.
- Complete word processing features, standard.
- Supports optional front panel.





MATCH THE RIGHT PRINTER TO YOUR NEEDS.			
Features	Sellum N-35	Sellum N-77	Sellum F-86
Speed	33 cps	55 cps	80 cps
Shannon Test	28 cps	48 cps	72 cps
Print Wheels	128 char.	128 char.	127 char. plastic 96 char. metal
Noise Level	60 db	60 db	60 db
Suggested Retail	$2495	$3295	$3495

Sellum Series Printers also available for most microcomputers. Sold only through dealers and systems integrators.

Extended 180 day warranty available.

UNIFEK

780 Charcot Avenue
San Jose, California 95131

"Integration for Tomorrow's Technology"

P-Cartoon



Communications Software

Why do people prefer E/LYNC to programs selling for five times the cost?

/LYNC $30

LYNC is a powerful yet easy to use ogram with the features they want most:

eady to run on IBM PC with Asynchronous Communications oard
ransfer ANY type of file from one computer to another
ransfer files between two IBM PCs or between a PC and a CP/M ystem
utomatic error detection and correction when transferring files
onversational mode allows typing messages that appear on both omputers
eal-time display of total bytes sent or received
nteract with time-share systems using phone modem
an be upgraded to LYNC for $95

LYNC $125

Frequent or professional users will want the additional features of LYNC . . .

- ★ Multiple file transfers including full 'wildcard' match
- ★ Fetch files from the remote computer
- ★ View disk directory of BOTH local and remote computer
- ★ Re-log onto another disk drive of local or remote computer
- ★ Send and Receive files from a time-share computer
- ★ Optional XON/XOFF protocol

CENSING:

YNC and LYNC are licensed on a per user basis. If you intend to use E/LYNC or LYNC to communicate with another person, they must also chase E/LYNC or LYNC. E/LYNC and LYNC versions for the IBM PC are written in 8088 assembly language. If you intend to communicate with P/M system, you will also need the CP/M version of E/LYNC or LYNC, which is written in Z-80 assembly language.

SK FORMATS:

DOS, 8" Standard, TRS-80 Mod II with CP/M, Osborne, Xerox 820, Vector Graphic, Cromenco, North Star, Superbrain

---

Super Mailist! $39

Why is this program currently selling like hotcakes at computer stores? The store managers say it is the best available! It has exceptionally good editing capabilities and it can sort and extract faster than the rest. Also interfaces with Wordstar's Mailmerge. A unique wildcard feature further simplifies your work. Maximum 1,000 members. An EXCEPTIONAL value at $39!

raph Charting Program $59

ate Pie Charts, Line Graphs, Bar Graphs, and Histograms with s versatile and powerful charting program. You define X and Y axis els (or pie segments), and then enter X and Y values. The data is led as necessary prior to printing graph. You can then either save graph to disk or call up SCRUMP! (Screen Dump Utility) to print ph to Epson or C.Itoh Prowriter printers. Write for free sample phs. Graph Charting Program: $59. With SCRUMP!: $75. Manual both, only $5.

nventory with Cash Register $125

signed for a retail operation with a maximum of 1,000 items (such a computer store). This easy to use program will make inventory ntrol a breeze! It will keep track of items on order and let you ow when to re-order, print Usage Reports, Inventory Lists, and es Tax Reports. Cash Register module updates inventory, calcu- s tax, generates invoice, and prints Transactions Register at end day. Inventory with Cash Register: $125. Manual only, $10.

roscript Text Formatter $75

mbine ProScript with a text editor such as EDLIN, Vedit, or MATE and you have the capabilities of a full-blown word pro- ssor! 29 print directives give you the control you need to produce ofessional looking documents with a minimum of effort. Auto- tic section and paragraph numbering and table of contents gen- tion make it ideal for producing technical manuals. Multiple rce files can be combined to produce a single output document. atures include: footing, heading, chapter, indent, format, justify, nter, etc. Special directives available for controlling Epson print- . Proscript: $75. Manual only: $10.

SCRUMP! Screen Dump Utility $35

Dump whatever appears on your video screen to your Epson MX-80/MX-100 or C.Itoh Prowriter (others available soon). Chain SCRUMP! from a BASIC program for dumping graphics or charts created by another program. SCRUMP! is fast and requires only 1-2 minutes for an average screen dump. Easy for beginners to use! SCRUMP! $35. Manual only, $3.

General Ledger with Graphics $295

Created and field tested by DataCount, an IBM 34 Data Center. This outstanding G/L program is easy enough for a first time user and yet powerful enough for CPA Client Write-up work. Account numbers can be up to 4 digits with up to 3 digit cost center code. System only allows balanced entries. Journal Entry Proof Report and G/L Posting Report provide excellent audit trails. Simple Month End and Year End closings with Budget Comparison Reports, graphics comparing actuals with budgets, and a 12 month Income and Expense Report. General Ledger: $295. Demo Disk & Manual: $30. Manual only: $10.

Btrieve Record Manager $295

Btrieve is a powerful record management system designed for applications programmers. Btrieve builds files based on B-Tree structures, and allows for both random and sequential keyed access to records in a database. Btrieve is written in 8088 assembly language, is very fast, and has capabilities comparable to record management systems on computers such as the VAX RMS or Tandem's Enscribe. Btrieve is a memory resident program that requires 10K RAM and supports applications written in IBM BASIC and IBM PASCAL. Utilities included. Requires PC with minimum 64K and 1 drive. $295. Demo disk & manual: $30. Manual only: $10.

Terms: Money Order, Check, C.O.D., MC or VISA, First Class postage included. UPS Blue add $3. C.O.D. add $5. CA res. add 6%. Overseas add $5.

Phone Order Desk: (805) 966-3077 10 am - 4pm PST Monday-Friday

INTERNATIONAL SOFTWARE ALLIANCE

1835 MISSION RIDGE ROAD SANTA BARBARA, CA 93103

E/LYNC & LYNC are trademarks of Midnight Software. ProScript & Btrieve are trademarks of SoftCraft. CP/M is a trademark of Digital Research.

BUSINESS/COREY SANDLER

Dot Matrix And The Printed Word

The daisy wheel outclasses the dot matrix as the printer for purists and professional writers.

Why do some people see red when they see dots? If we knew the answer, we could save ourselves a lot of money, time, and effort. But the fact is that those marvelously fast, efficient, and relatively quiet dot matrix printers haven't yet made the grade for many professional applications.

Publishers, chief executives, editors, and clients still squawk when they see a document printed in dots. "First impressions are very important," says Dominick Abel, a New York literary agent. It's his job to sell the work of his clients to publishing houses, and he says it's more difficult when the print is dotted. "If something comes in to me typed very neatly, I'm predisposed to like it—at least until I've read it," he says. "Words are words, but I do think there's a stigma. Sending dot matrix print is like sending a dirty, dog-eared manuscript. The copies are very often faint, and the printing looks odd and is more difficult to read. It may be the most wonderful prose I've ever read, but you only get one shot. You want a publisher to read your work."

Abel believes that distaste for dot matrix may be linked to a subliminal suspicion that you're receiving the product of a factory rather than an individual. That good typewriters and daisy wheel printers are also used to spit out computer-produced letters and manuscripts doesn't seem to matter. "People don't mind reading clean xeroxes of typewritten copy," he says, "but the dot matrixes make people think that they're getting something less than the best."

Abel knows of at least one publishing house that has a hard-and-fast rule of not accepting a final version of copy printed with a dot matrix machine. They may read a draft, but they won't send it on to the typesetter unless it looks like it's from a "normal" typewriter.

Daisy wheel printers are not without their drawbacks for the writer. They're typically more expensive, noisier, and slower than their dot matrix cousins. In fact, dot matrix printers may be ten times faster than daisy wheels. A dot matrix printer working at 120 cps could print a 350-word page in about 16 seconds, while a 12 cps daisy wheel might require more than 2½ minutes. Think about that difference when you're working on a 600-page manuscript. Expensive office daisy wheel printers can now work in the 60 to 80 cps range.

The daisy wheel and typewriter printers cannot produce graphics. You're limited to a smaller character set (whatever is on the daisy wheel, thimble, or typewriter molds) rather than the computer-addressable characters that most dot matrix printers can draw. Some of the less expensive daisy wheels do not even duplicate all the essential characters of BASIC, so they cannot accurately print out a program listing.

PUBLISHERS, chief executives, editors, and clients still squawk when they see a document printed in dots.

The manufacturers of dot matrix printers are sensitive to the lack of professional acceptance. At least one manufacturer has come up with a machine that combines both printing modes so that you can print your proofs at high speed with dots and use a daisy wheel for the final copy.

Already on the market are some high-quality dot matrix printers from manufacturers who are trying to upgrade their image by adding correspondence quality modes. Correspondence quality essent ly refers to emphasized printing with dot matrix head making two or m passes over each letter, sometimes off ting the position by a fraction of an in The effect is close to that of a daisy wh or typewriter, but purists can still tell difference.

Among these machines are the Mic prism Dot Matrix Printer (by Integral D Systems), which produces a high-den dot image that the manufacturer c "Maisey" printing; the MP Mary Peter (by Micro Peripherals, Inc.) with two ferent fonts, a 7x9 matrix for high spe and an 11x9 matrix for corresponde quality; and the Okidata Microline 84 Microline).

Another alternative is to investig whether your publisher or client can cept your copy electronically. If you de er a stream of bits over a telephone li you don't have to worry about what kin printer is at the other end. In fact, so publishers are encouraging writers work with word processors to save ti and money, and at least one house loaned machines to some of its regu writers.

Most publishers still demand h copy, however. If you have to use a prin there are several options available. can challenge a publisher to take y deathless prose the way you send it, gardless of his or her prejudice. (I'm ready to take that chance—I have m gage payments to make.) You can bu daisy wheel or an electronic typewrite your printer and sacrifice a great dea speed for a more polished appearan You can buy a dot matrix printer for y proofs and a daisy wheel for final co You can use the services of an outs company, such as CompuServe, and s your copy by disk or modem to the co pany's printer for proofs or final copy. you can wait until society catches up w technology, if not vice versa.

NEW!

MEGARAM

IBM® COMPATIBLE MEMORY BOARD



*Registered Trademark of IBM

FEATURES:

- On Board Memory Expansion from 64K to 1M Byte
- Memory Write Protect Command
- Program Controlled Banking Capability in 128K or 512K Blocks
- Memory Error Detection
- Flexible Memory Boundary Selection
- On Board Two MDOS Supported Asynchronous RS-232-C Ports
- Price Starts at $495.00

MBI Microcomputer Business International

P.O. BOX 16115, IRVINE, CA 92713
(714) 553-0133 (714) 727-0202

PAYROLL ?

Compare these Features:

- 200 Employees
- Multiple States
- 5 Pay Rates
- Vacation Pay
- Sick Pay
- Non-Tax Pay
- 6 Deduction fields
- Local Tax
- 941A's & W-2's
- 99 Departments
- FUTA & SUTA
- Paychecks & Stub
- ~ TIP CREDIT CALCULATIONS ! ~

Compare this Price: $495

•demo disk and manual – $50

ASTRA

APPLIED SOFTWARE TECHNOLOGY
223 Hunnewell St. Needham, Mass. 02194
Call 1-617-444-5551



At last, a challenging adventure game featuring machine language speed and 3-D graphics.

Med Systems Software and CAU bring you

ASYLUM

for the IBM PC. You are placed in an institution with guards, doctors, and mad inmates. Your only goal is to escape alive. But be warned: your own sanity will be at stake as you explore the halls and offices of ASYLUM!

Requires one disk drive, 48K, and monochrome adapter and display. Order yours today!

IBM PC ASYLUM

$39.95 NY State residents and applicable sales tax. Outside USA and Canada add $4.00 shipping.

MasterCard VISA

CAU™

Computer Applications Unlimited™

A division of CAU Inc

P.O. Box 214 Rye, New York 10580 (914) 937-6286

PC/FORTH

Why you should try FORTH on your IBM® Personal Computer . . .

- FORTH is interactive and conversational like BASIC
- FORTH's performance is far superior to ordinary interpreted languages, and wh carefully tuned can approach the speed of equivalent assembly language progra
- FORTH's compiler includes constructs that support modular, structured programmi
- FORTH is largely written in itself and is highly portable (can you imagine a BAS interpreter written in BASIC?)
- FORTH includes a user-controlled virtual memory facility for program text and da
- FORTH permits easy user definition of new data types and control structures.

The PC/FORTH package includes the FORTH interpreter/compiler with virtual memory management, a full scr (visual) editor optomized for the PC graphic display capabilities, a true 8086 assembler with local label reverse translator, debugging aids, utilities, and a 150 page manual. FORTH "screens" are stored in stand random access disk files and may coexist with other program and data files. The FORTH vocabulary has b extended to give full access to all operating system facilities including file and record management. Optio extension packages for data base management, floating point math, and advanced color graphics are a available.

Software developers: our version of the Nautilus FORTH Cross-Compiler allows you to create dedicated dis ROM-based applications written in FORTH. "Headerless" programs may be generated which are extrem compact, efficient, and are nearly impossible to disassemble.

Current prices for PC/FORTH and extensions are given below. Shipping by UPS or first class mail within USA Canada included. California residents add appropriate sales tax. Purchase orders accepted at our discretion. credit card orders.

PC/FORTH (Specify CP/M-86® or PC/DOS)	$100
Software floating point extensions	$100
Intel 8087 floating point extensions	$100
Advanced color graphics extensions	$100
Data base management extensions	$200
Nautilus Cross Compiler (PC/FORTH also required)	$300

Laboratory Microsystems
4147 Beethoven Street
Los Angeles, CA 90066
(213) 306-7412

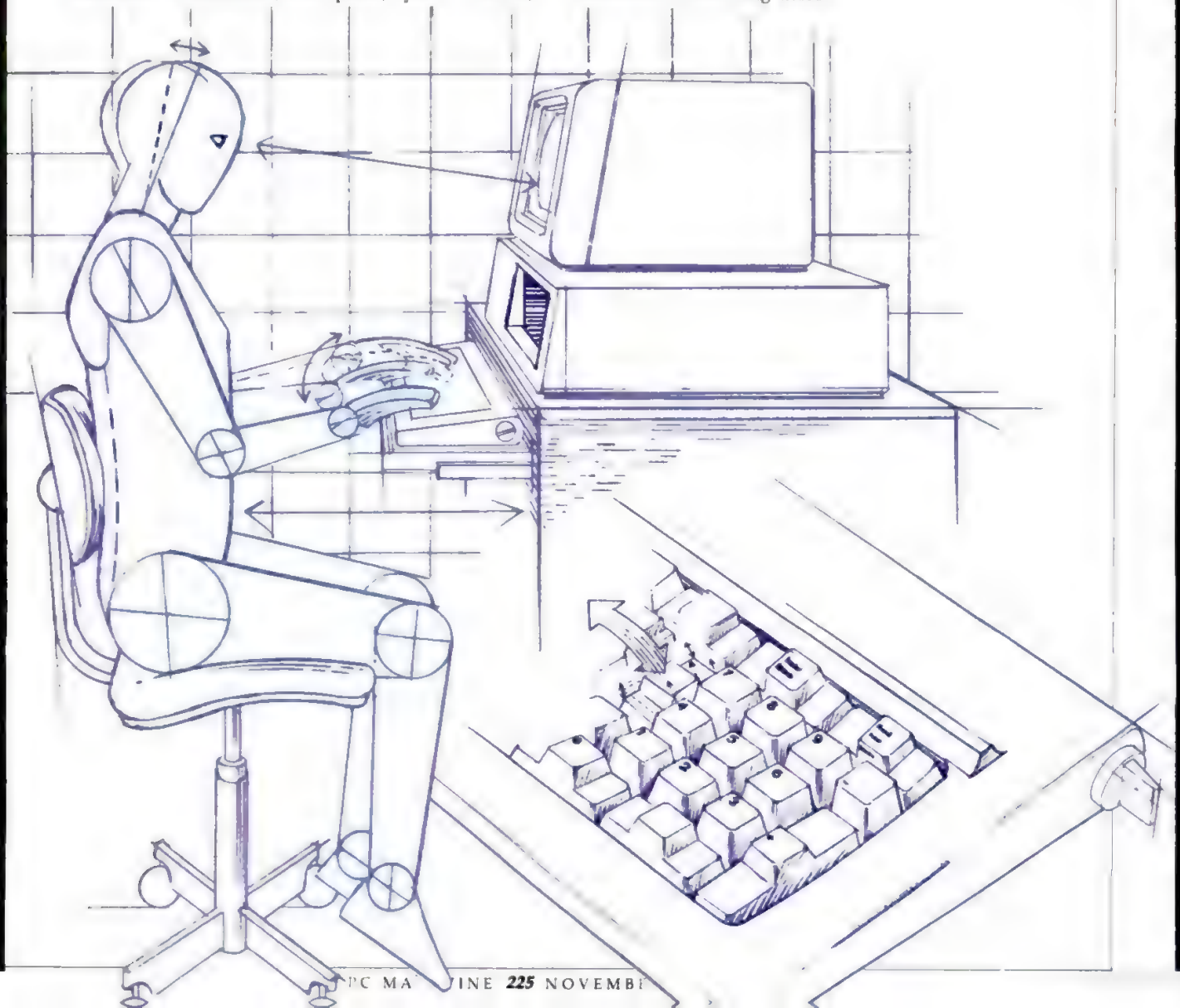
CP/M is a registered trademark of Digital Research, Inc
IBM is a registered trademark of International Business Machines Corp

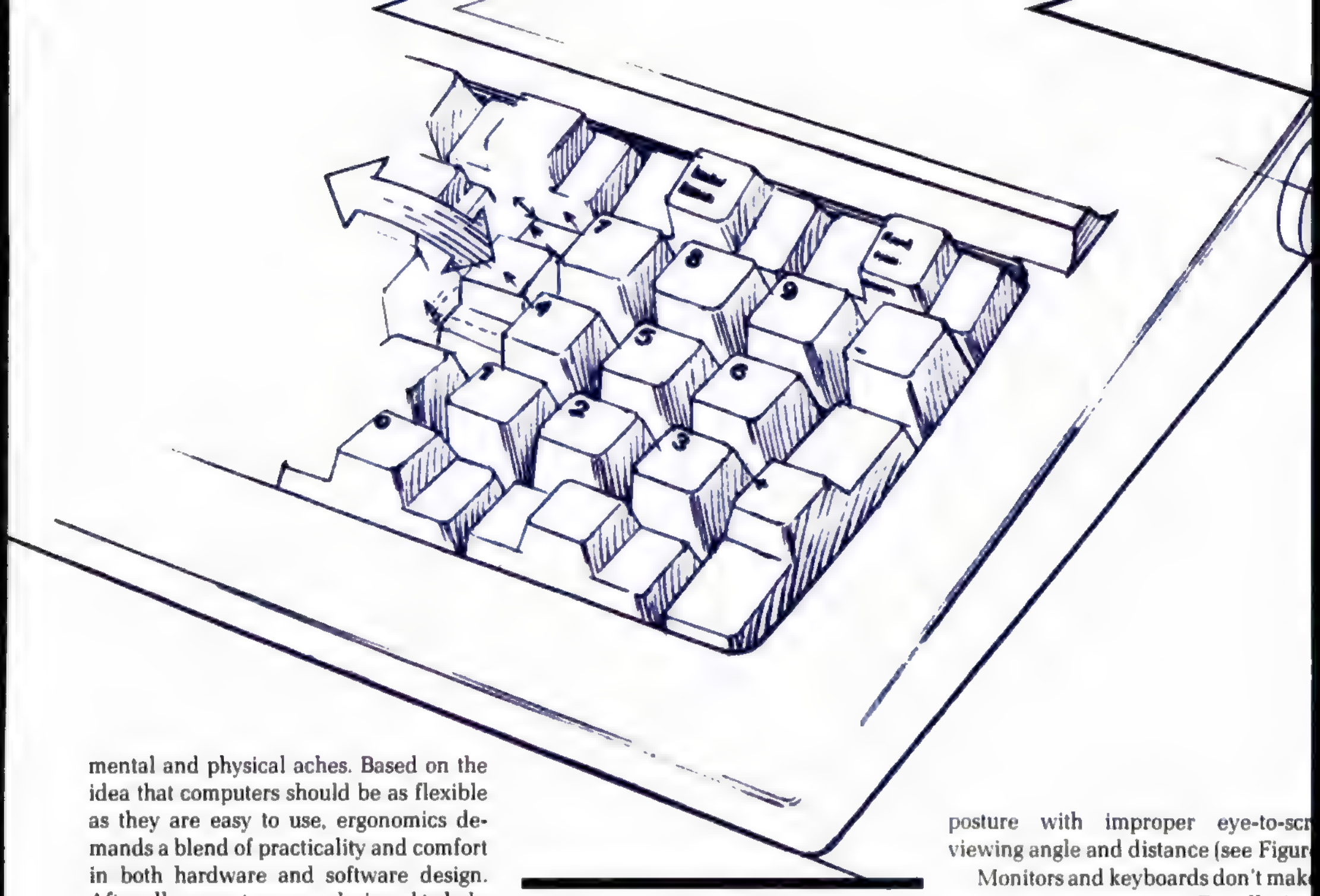
Ergonomics is the science of taking the pain and frustration out of computer use, but few people realize that it means more than redesigning tables and chairs.

The Hards And Softs Of ERGONOMICS

Working on a personal computer can sometimes be a real pain. Although computers don't cause permanent physiological or psychological disorders, their improper design and use can lead to such maladies as headaches, back pains, eyestrain, stress, and frustration. Some of the effects of these problems are absenteeism, high turnover, and low productivity —poxes on the efficiency of any company.

Human factors engineering, or ergonomics, is the science of reducing these





The Hards And Softs of ERGONOMICS

mental and physical aches. Based on the idea that computers should be as flexible as they are easy to use, ergonomics demands a blend of practicality and comfort in both hardware and software design. After all, computers were designed to help solve people's problems, not create them.

Hardware Aches and Pains

Most ergonomics research has concentrated on the physiological effects of computer design, particularly of visual display terminals (VDTs) and furniture. Three of the most common and potentially harmful problems plaguing display users are glare, flicker, and bad resolution. Glare, the reflection of light on the screen, can be drastically reduced by using a display, such as the PC Pedestal by IBM, that tilts or swivels, or by applying antireflective treatments to the display's face.

Only high-quality design and components can reduce flicker (the oscillation of the image on the screen that occurs when its illumination fades away faster than it can be renewed) and bad resolution (an unclear image on the screen). The special ergonomic design of the IBM Monochrome Display, a high-resolution monitor with an antiglare, green phosphor screen, effectively remedies all these problems.

Although the screen's character color (green, amber, or white) is a subject of debate between vendors and buyers, the choice is more a matter of personal preference than scientific decree. For those with a preference, companies such as Amdex Corporation and USI International offer full lines of amber, green phosphor, and black and white terminals.

Although ergonomically designed displays are becoming more common, properly designed keyboards are still rare. Ideally, keyboards should be comfortable for the fingers and wrists and should provide feedback to confirm that keying action is taking place. The main aspects of keyboard design are the sculpturing of the keyboard's profile and keycaps, the height of the home-row keys in relation to the desk top, and the keyboard's slope. Since typists have shown improved speed and accuracy with keyboard feedback, ergonomic design should also include audible and tactile feedback, rollover, and a degree of reflectiveness.

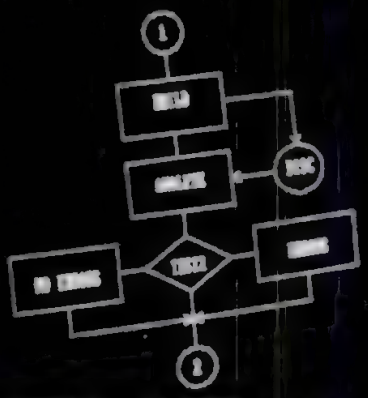
Perhaps most important of all, a keyboard and its display should be detached to allow operators to find the most comfortable posture for themselves. A keyboard attached to the display inevitably forces the operator to adopt an incorrect posture with improper eye-to-scr viewing angle and distance (see Figur

Monitors and keyboards don't mak ergonomic environment. Equally im tant to good working conditions are s things as lighting, ventilation, work sp layout, and furniture. Featuring a horiz tally and vertically adjustable keybo the mobile Compucart by Compucart good example of ergonomically desig furniture. Other companies such as L rence Wood Works in Lawrence, Ka and The Bench Collection in Santa R California also make computer furni engineered to minimize fatigue and prove the user-system interface (USI

The Art of Ergonomic Software

While the physiological side rece most of the attention, there remains other aspect of ergonomics relatively known to the computer-using public. design of ergonomic software is the and hardware is the science. Altho companies such as IBM, the Mitre Co ration, and Xerox are collecting quan tive data to develop formal theories, ware design is usually guided by intuition and experience of analysts programmers. Their goal is to create ware that unburdens users of tasks computer should be doing for them; less users have to do to perform a task easier it will be for them to learn to computer systems.

The ergonomics of software covers psychological aspects of computer from what appears on the screen and



It's Now Available!

THE LIGHT PEN
or Your IBM Personal Computer



for:
enu selection.
teractive graphics.
ducational programs (without
eyboards).
ust plain fun.

fessional Quality and Durable
struction. Push-Tip Standard.

mplete with Storage Clip. Simple
allation.

y Supported with Color/Graphics
pter and most B&W or Color
plays and TV's. (Not For Use with
Monochrome Display).

no/Games Diskette Available Now.
itional Software Under Develop-
t.

use coupon, or see your participa-
IBM® dealer.

FTG
DATA SYSTEMS
10801 DALE STREET, SUITE M-2
P.O. BOX 615-C
STANTON, CALIFORNIA 90680
(714) 995-3900

Mail To:
FTG Data Systems
10801 Dale Street, Suite M-2
P.O. Box 615-C
Stanton, California 90680

Name _____
Street _____
City _____ State _____ Zip _____
Telephone _____
☐Visa ☐M/C # _____
Exp. Date _____
Signature _____

Quantity	*Description*	*Total*
_____	FT-156 Light Pens @ $159.95	_____
_____	Demo/Games Discs @ $39.95	_____
	Shipping @ $5.00 per order*	_____
	California - add 6% sales tax	_____
	Total	_____

Old prices honored until September 15. 1982.

Check, Money Order, COD, or Visa - M/C Accepted.
*No Shipping Charges if paid by Check or Money Order. Allow 2 weeks for personal checks.

users "talk" with the computer to intelligible documentation and effective training. With the actual software, however, the USI, the channel of communication between the human and the machine, is the center of ergonomic concern. The critical element of command languages determines how the operator communicates with the computer, and vice versa.

Command languages usually consist of three ways of conversing with the computer—menus, mnemonics, and function keys—and each has a place in ergonomic software design. Menus, for example, are better for novices because they are based on recognition rather than memory. Their drawback is that they slow down the interaction process considerably. Mnemonics, however, require the user to recall previously memorized codes. This method is usually preferred by proficient operators because the interaction process tends to be faster than with menus.

Function keys are based on both recognition and recall and are good for frequently used functions. Their problem is that keyboards can accommodate a very limited number of these keys. A fourth command language, "natural languages," is seemingly ideal, but is not yet suitable for USIs. Programs have yet to be designed that can understand the many ambiguities involved in communicating with natural languages.

Although software designers must create a thoughtful combination of the first three command languages to produce an ergonomic program, there are three other important elements of USIs—HELP!, OOPS!, and response time—that must be considered. HELP! is to assist users who get lost using the system and don't know how to continue. It should be context sensitive so that the system will automatically know which topic the user wants information about. OOPS! is for user detection of human and machine errors and will allow recovery from them with minimal aggravation and loss of data. Response time, the delay between human action and the system's reaction, can vary from a few tenths of a second to a minute or two. To prevent user frustration, response time should match the speed and flow of human thought processes.

How the user communicates with the computer is important and so is how system talks back. The design of effec screens, in terms of what they say— how they look—requires consiste structuring, highlighting, and lack of ter. Screens should teach users clearly simply the things they need to know.

ALTHOUGH ergonomically designed displays a becoming more common, properly designed keyboard are still rare.

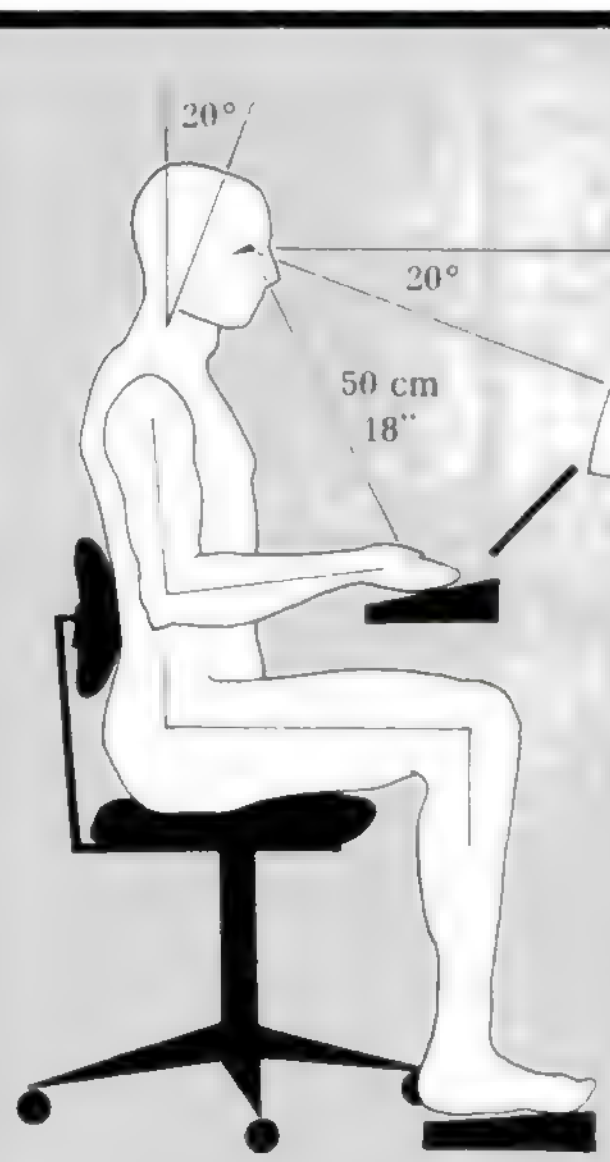


Figure 1 Posture at a VDT

The arrows indicate the adjustment points necessary to adapt the work space to a specific operator, and the angles indicate the natural posture the body adopts to minimize pain and discomfort. A proper, upright sitting posture determines that the same 18-inch (50 cm) eye-to-keyboard and eye-to-screen distance should be maintained to minimize the amount of refocusing the eye has to perform. With between 8,000 to 25,000 eye movements between paper and screen in an 8-hour period, continuous refocusing can quickly lead to eyestrain.

cause highlighting certain informatio the screen is key to user comprehen most terminals have several screen tures such as reverse video, high or intensity, blinking, and underlining.

Designing Ergonomic Software

While allowing operators to use ex ence gained in one place in as many instances as possible, ergonomists also make their systems adaptable t user's own preferences and levels of fort. Proficient users, for example, sh be able to bypass certain operating during the execution of a function, the system should continue to prompt ices step by step, without the bene software modifications. Considerin diversity of users and potential ap tions, developing ergonomic softwa not a simple task.

One software package that follow rules of ergonomic design is *Context* by Context Management Systems in rance, California. Using the same mands for each, this program consoli electronic spreadsheet, graphics, base, word processing, and soon tele munications functions into one pac With this program financial figures c analyzed in a spreadsheet format; g ics based on these figures can be ge ed and then inserted into the middl manuscript; and the entire package c telecommunicated to a terminal at an location.

SYSTEM-BACKUP™

THE UTILITY THAT PROTECTS YOUR SOFTWARE INVESTMENT



IBM IS A REGISTERED TRADEMARK OF IBM CORP

SYSTEM-BACKUP is exclusively available from
NORELL Data Systems
3400 Wilshire Blvd., P.O. Box 70127
Los Angeles, CA 90010 (213) 257-2026
SEND FOR OUR FREE CATALOG

Use Your IBM as a Graphics Terminal!

Complete terminal emulator and file transfer system communicates with any remote or in-house computer. Emulates HP26xx and VT52 terminals, with **hi-resolution HP26xx vector graphics plotting.** Menu driven, easy to use. Full 80x25 character display, 640x200 graphics.

VDTE (Video Display Terminal Emulator) is a *new* program written especially for the IBM Personal Computer. Ten speeds include 300, 1200, 9600 baud. Uploads and downloads files. Optional log of terminal session, send predefined sequences, enter communication setup only once, exit/return to program without dropping line. Uses either display card, but vector graphics requires color/graphics card. 36 page user's manual.

Order Today! $50.00 postpaid in the USA. California residents add 6% sales tax.

inner loop software

Inner Loop Software
P.O. Box 45857-A
Los Angeles, CA 90045

IBM is a trademark of International Business Machines. HP is a trademark of Hewlett-Packard, and VT52 is a trademark of Digital Equipment Corporation.

MEET THE PROGRAMMER!



If you can't find a business software package that does everything you need, or if you want to custom design specialty programs for your business . . . MEET THE PROGRAMMER.

THE PROGRAMMER is a BASIC-language program generator which is powerful and highly-versatile, yet easy to use.

It does everything but actually create program ideas . . . those come from you. But THE PROGRAMMER can implement your ideas by writing the appropriate lines of BASIC.

You control THE PROGRAMMER by choosing various functions from a series of "menus". When you've finished a program, save it on another disk for future use, and begin creating again.

THE PROGRAMMER comes with a complete instruction book which clearly explains how to create programs for almost any application.

If you're tired of buying software that just can't do the job . . . meet THE PROGRAMMER. The solution to all of your business software problems.

THE PROGRAMMER works with the Apple II Plus® (48K Applesoft® or 64K CP/M®) and the IBM Personal Computer®. Get THE PROGRAMMER at your local software retailer, or call 1-800-428-3696 to order. (Indiana residents, call (317) 298-5566). MasterCard and VISA accepted.

~~THE PROGRAMMER $495.~~

ADVANCED OPERATING SYSTEMS
4300 West 62nd Street, P.O. Box 7092, Indianapolis, IN 46206

Apple II Plus, Applesoft are registered trademarks of Apple Computer, Inc.
IBM® Personal Computer is a registered trademark of International Business Machines, Inc.
CP/M® is a registered trademark of Digital Research, Inc.

DESTROY ALIEN PODS

BE A COMBATANT IN THE PODLASERIUM™!

SUPER SOUNDS LASER, MISSLES, BOMBS, & SHIELDS

Color Monitors have multi-colored Pods, Shields, & Bombs

Night falls as you enter the war zone where ALIENs were last seen depositing PODs. You are alone, one combatant against the many, seeking fame, fortune, and a high score. Suddenly, a bright flash of light above you rams home the reality of the ALIEN threat as a POD is formed. Carefully using your retro rockets to get in position for the kill, you aim the laser while thinking of the pleasant music played when PODs are destroyed. Before firing you scan the horizon checking for more menacing PODs worth more points. Seeing a guided missle being launched from a newly formed POD you activate the laser and move quickly from the path of the missle. DIRECT HIT on the POD and the masses bring forth melody. You don't wait around for the tune to end as more PODs are forming and the fuel reserve is getting low. Only two hundred more points worth of dead PODs and both fuel and ammo will be replenished. Can you make it till then, avoiding bombs, shields, and missles? Will your name be added to the permanent list of Top Ten Combatants? The universe must be saved.

IBM PC DOS, 1 Drive, 80 Col Display
Color Graphics Monitor Adapter Interface Not Required

SOUND ON/OFF and GAME FREEZE Commands — Feature Demonstration

SEND TO: DP Computer Services Company
5019 N. Washington Blvd. • Arlington, Virginia 22205 • (703) 276-1333

Please send me _____ diskettes containing PODLASERIUM

☐ I have enclosed a check or money order for $_____ . _____ for _____ diskette(s) at $34.95 each.
☐ Please send shipment C.O.D.
☐ Charge my Mastercard/Visa (circle) MC VISA _____
(Order must be signed below) Exp. Date _____

Name _____ Address _____
City _____ State _____ Zip _____
Phone _____ Signature _____

VISA PODLASERIUM is a trademark of DP Computer Services Company. MasterCard

LAS VEGAS

BLACKJACK™

Be A Winner. Amaze Your Friends. Become a Pro-Class Blackjack Player. If you can beat this game, you can win at the tables. A faithful reproduction of Las Vegas "Strip" Blackjack including multi-deck play (1 to 10 decks), Splits, Double Down, and Insurance bets. Teaches card counting with any card weight and keeps a running count. The illustrated 35 page instruction manual is itself a comprehensive primer on how to play winning blackjack.

Lots of sounds and graphics for realism, including movement of cards and chips. Requires IBM* Personal Computer, 64K memory, IBM DOS, BASICA, and a green screen or color 80 column display. Order your Las Vegas Blackjack, today! Only $39.95 including postage. (CA residents add 6% tax.)



Available at COMPUTERLAND® and other fine computer retailers.

*IBM is a trademark of the International Business Machines Corporation

Quala™
1014 Griswold Ave. Dept.
San Fernando, CA 91340
(213) 365-9526

Other examples of software that some way follows ergonomic design c cepts are VisiCalc and the other spre sheet analyzers because of the strai forward and effective manner in wh

DEVELOPING ergonomic software i not a simple task.

these programs help users crystallize t thoughts and find the answers they ne *WordStar*, too, follows these design c cepts with its comprehensive refere system.

Low budgeting is the most comm reason for uninformative and ineffec software documentation. Too many of day's software designers consider p gramming the only important aspect to resolved; they leave training and do mentation as an afterthought. Train and reference manuals should be cl concise, unambiguous, and structu and should include quick-reference ca and indexes. Figures, symbols, and ex ples should be used to convey ideas ef tively. Finally, with every enhancemen update the system receives, the docum tation should also be revised.

The next step of the computer rev tion has begun. Although advances technology will make relatively inexp sive devices appear on everybody's d and tabletop, the ergonomic design of h hardware and software is not fully un stood. In time the actions that will m mize the physical and mental discom afflicting computer users will bec well defined. As we find ways for com ers to help us, we will also eliminate m of the ways they hurt us.

Richard P. Koffler holds Master of ence and Bachelor of Science degree Computer Science and Engineering f the University of California, Berke and the Massachusetts Institute of Te nology, Cambridge, respectively. He is publisher and editor of The Ergonom Newsletter *and has participated in re studies that examine the impact of mi computers on large organizations.*



IBM OWNERS ARE DISCOVERING WHAT OVER 10,000 APPLE OWNERS ALREADY KNOW.

ces are you don't truly realize how helpful computer can be in managing your family ces.

The key is selecting the right software. s why you should know about a program become the runaway best seller among e owners*—the Home Accountant™ from inental Software.

ADDED POWER FOR IBM USERS.

e Accountant Plus for the IBM Personal puter has all the power and ease of operation made the Apple version such a success. t includes a brand new Forecasting Module gives you a peek at the future. You can ate various investment strategies—or let the am show the way to your financial goals.

Of course, you get all the great features of Home Accountant. Like room for up to 100 budget categories, 5 different checking accounts, and all the credit cards you can carry. Automatic printing of your net worth and standard financial statements—plus checks and any custom reports that you specify. Also, full-color graphs† of actual vs. budgeted expenditures, trend line analysis, and more.

READY TO GO TO WORK—TODAY.

Sooner or later, you're going to want your computer's help with your personal finances.

Over 10,000 users have already found the ideal answer. Now it's your turn.

Home Accountant Plus. About $150 at computer stores everywhere.

Continental Software

Call or write us for your nearest dealer. Continental Software, 11223 Hindry, Los Angeles, CA 90045 (213) 417-8831. *Based on 1 in home software purchases. Softalk magazine (March, 1982)

Capturing Keystrol



Illustration: Don Day

ave money, minimize proofreading, and increase urnaround speed by using the typesetting interface bility of your PC.

Anyone familiar with traditional typesetting may suspect that the claims made about telecommunications interfaces are too good to be true. But it's a fact that the IBM PC and a compatible word processing package can save you typesetting time and money. If you also use a program that checks spelling, you can reduce the need for proofreading, a time-consuming part of the typesetting process. Your finished documents can be sent over the phone to one of the growing number of phototypesetting firms equipped to handle telecommunications. In typesetting, time equals dollars. This interface ability can save both because once the document is typed and saved to disk, the typesetter doesn't have to spend costly hours rekeyboarding the text.

I saved an average of 20 to 30 percent on typesetting time by telecommunicating the *EasyWriter II* manual, North Star's *Dealer News*, and several OSBORNE/McGraw-Hill books.

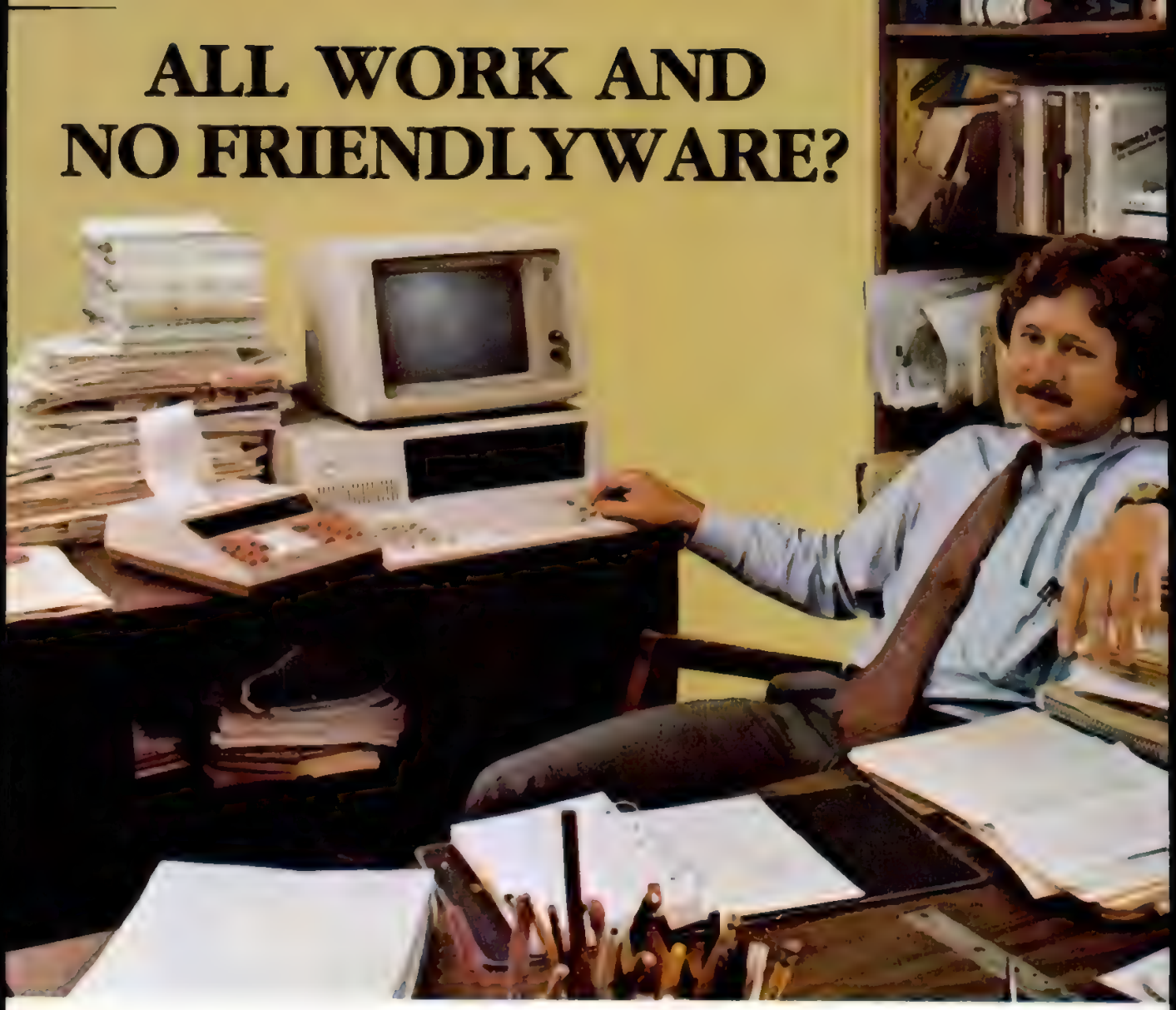


Interface Procedures

Typesetting interface procedures (sometimes called "capturing keystrokes") are similar to most other telecommunications procedures. First, you need the hardware and software required to transmit your data: a serial interface board, communications software, and a modem.

IBM produces a basic communications software package called the *Asynchronous Communications Support Program*, which is available for $40 from IBM's Systems Products Division. Another good package is *PC-Talk* from Freeware. Whatever you choose, you'll need a modem such as the Hayes Stack Smartmodem, which sells for $279, or the Universal 212A Data Modem, which sells for $695. IBM produces a reasonably priced serial interface board for $195, but you might consider Quadram Corporation's Quadboard. While comparatively expensive at $595 to $995, depending on memory size, it combines four IBM PC boards to leave slots free for further memory expansion. (See *PC* Product Guide, September 1982.)

ALL WORK AND NO FRIENDLYWARE?



Let's face it. Nobody can take a steady diet of calcs, spread sheets and d-bases.

That's why we created the FriendlyWare PC Introductory Set. **And that's why it's become one of the largest selling PC software packages on the market ($49.95 Suggested Retail).**

You want work? Volunteer for overtime.
You want relaxation? Grab your FriendlyWare.

Available at participating ComputerLand™ Stores or wherever the IBM PC is sold.

FRIENDLYWARE™

Easy To Use, Easy To Buy

DEALER INQUIRIES: 817-277-9378

IBM® , Computerland, and FriendlyWare are Registered Trademarks of International Business Machines, Corp., Computerland Stores, Inc., and FriendlySoft, Inc. respectively

"NOT ME"





oad your communications software.
ype D-BASIC PC-TALK/C:1024 and
ress Enter. Wait for the "beep-beep."
urn the modem on.
all the typeshop data line and wait for
e beep.
urn the modem to DATA and place it
the cradle (or hang up, depending on
odem type).
ress the space bar and [Alt]-T; then
pe (disk drive):(file name) and press
nter. The screen will look very strange
uring data transmission. Text appears
ith missing letters because every
ghth bit is removed, and all the type-
tting code is visible.
fter all the type is transmitted, turn the
odem back to TALK and hang up.
o leave *PC-Talk* press [Alt]-X. The
peshop now has your text, exactly as
ou entered it, ready for typesetting.

Capturing keystrokes is not necessarily
proof. Problems may arise that create
xpectedly higher rather than lower
s. The most common pitfalls occur in
ing for text format, and type specifica-
. Keep in mind that if the manual sys-
you use is poor, the automated system
erits its weaknesses.

ck to Basics

Before using your typesetting interface
ity, develop good communication with
r typesetter. It is very important to un-

BEFORE using your typesetting interface bility, develop good ommunication with your typesetter.

stand how type is measured, or
ec'd." Specifying type correctly in-
ases the probability of a smooth inter-
e job. You must also know how to enter
l code the text to avoid costly human
ervention.

The most common and expensive mis-
es are made in text formatting (not to be
fused with file formatting). Documents

How to Spec Type

Setting the printed word.

To spec type you must know how it is measured. Historically, several measurement systems have been used. The most common units of measurement are picas and points. If you attempt to discuss pitch and lines per inch, your typesetter's estimation of your knowledge will drop.

Horizontal size is measured in picas. There are 6 picas per inch. Picas are used to measure the width of a typeset line. If you want a line of type 3 inches wide, the typesetting measurement is 18 picas.

Vertical character size and space between lines are measured in points—72 points to the inch. The type itself is measured from the top of the tallest letter to the bottom of the longest letter. Since a point is small, most people use a point scale to measure letters. The scale is printed on clear film and moved over a line of text, to match the print to the scale.

Space between lines, also measured in points, is called "leading" (rhymes with bedding). Before phototypesetting replaced lead type, typesetters inserted strips of lead between lines of printed text to space or "lead" the line. If you want text to have 2 points of space between the lines, add 2 additional points to the size of the type. If you have chosen a 12-point typeface and want 2 points of leading, you quote your specs by saying, "I'd like my type '12 on 14.'" The typesetter will know to set 12-point type on a 14-point line. A request for 12-point type, with 2 points of lead between lines, and with a line width of 3 inches is stated, "12 on 14 by 18 picas." The written instruction looks like this: "12/14 x 18."

There is more to typesetting than selecting type size. Choosing the right typeface and the style of type is just as important. There are many typefaces, with more being designed every day, and many forms within each face. A single typeface can be condensed, extended, italicized, made bold or light, and so on. Most typesetters offer their clients a variety of typefaces and will have samples of each face they use. Make sure that you choose a face appropriate to the task. Nothing can be more disappointing than a good design ruined by the wrong face.

The art of spec'ing type encompasses more than these few paragraphs include. If you are interested, your typesetter may have a book to lend you, and any library will have information on typesetting, layout, and the history of the printed word. —*D.R.*

FROM IBM



TO IBM



WHAT IS THE CONNECTION?

ESCON PRODUCTS, INC.

Connect Your Personal Computer to Any IBM Selectric® or Electronic Typewriter.

LETTER QUALITY UNDER $600

12919 Alcosta Blvd.
San Ramon, Ca. 94583
(800) 227-2148 Toll Free
CA (415) 820-1256

IBM is a registered trademark of International Business Machines Corporation.

must be processed using typesetting, not word processing, standards. If you use the centering function of a word processing program, for example, the PC determines the center of the line from the number of characters on that line. Each character is the same width. Type composed by typesetting is proportional; the width of each character varies according to its number of width units. An *A* is the same width as another *A* in the same typeface but may not be the same as an *I* or a *W*. Width units, like height units, are called "points." The measurement used to center a typesetter's line of type is determined by the number of points—not characters—in the line.

Because the PC measures in letter spaces and the typesetter measures in points, many of the text formatting features in word processing programs cannot be used for typesetting. Instead, you format with a series of prearranged codes inserted in the text file. You can also mark the hard copy printout with instructions to the typesetter. In either case, do not use the formatting features of your word processor—not even indents. The more you use those features the more time the typesetter will spend cleaning the files of format code.

Coding Document Files

All typesetters and typesetting machines have unique coding requirements. The codes, which instruct the typesetting computer, are called typesetting mnemonics. The AM Comp/Set, for instance, recognizes $FT1 as the instruction to use whatever font is designated as font number 1. $FT2, therefore, instructs the computer to switch to font number 2, and so on.

Some advanced typesetting systems can change any character to a recognizable code, allowing flexibility to customize codes for frequently used formats. For instance, you might want to use > to indicate boldface, and < for standard face. Whatever choice you make, be sure to consult the typesetter first; then be consistent. Don't change code in the middle of the job. Incorrect coding can prove very costly because the typesetter will have to go through the entire file to clean out the bad code and insert corrections.

The typesetter will give you a list of mnemonics. He or she will probably also provide a list of typesetting guidelines used in the shop. If you have any questions about the effect of any code, or any part of the typesetting process, ask. Talk cheaper than yards of useless type.

Be Sensitive

In years past, typesetting was a c requiring a great deal of skill and exp ence. Many of those skills are no lo necessary. Computers have narrowed gap between skilled typesetters and g

COMPUTERS have narrowed the gap between skilled typesetters and good typists.

typists. Not all typesetters welcome brave new age. Some bitterly resen Many highly skilled people are watch their jobs being whittled away by tech ogy. Be sensitive when dealing with y typesetter. The owner of the shop may l the efficiency of this kind of typsesett but the employees may feel that their j are threatened.

Typesetting Tips

Following the do's and don'ts listed low will help produce cleaner docum files and keep typesetting costs down DON'T:

- use word processing formats of kind (including indents, centering, jus cation, bold or shadow print, underli tabs, headers, or footers).
- use the letters *l* and *o* when you m the numbers *1* and *0*.
- transmit files before they have b proofed at least twice.
- interface small jobs.

DO:

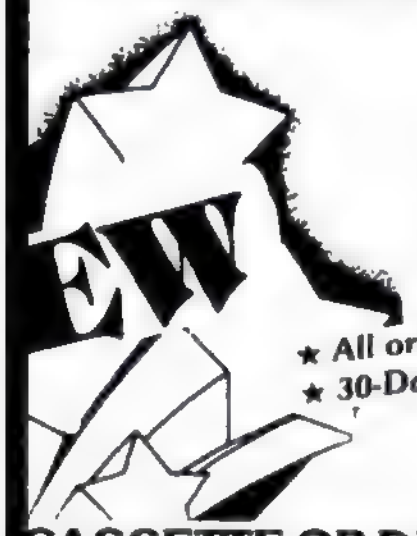
- ask questions.
- communicate with the typesette his or her own language.
- learn the basics of type specs measurements.

If you follow these basic tips, you n find that capturing keystrokes is an e cient and inexpensive alternative for y typesetting needs. Remember: Compu don't erase mistakes; they just make th faster.

H&E COMPUTRONICS INC.

EVERYTHING FOR YOUR TRS-80™ • ATARI™ • APPLE™ • PET™ • CP/M™ • XEROX™ • IBM™ • OSBORNE™ • •

* TRS-80 is a trademark of the Radio Shack Division of Tandy Corp. · * ATARI is a trademark of Atari Inc. *APPLE is a trademark of Apple Corp. * PET is a trademark of Commodore
* CP/M is a trademark of Digital Research · *XEROX is a trademark of Xerox Corp. * IBM is a trademark of IBM Corp. · * OSBORNE is a trademark of Osborne Corp



BUSINESS PAC 100

★ All orders processed within 24-Hours
★ 30-Day money back guarantee

100 Ready-To-Run Business Programs

CASSETTE OR DISKETTE).....Includes 128 Page Users Manual.....
ntory Control.....Payroll.....Bookkeeping System.....Stock Calculations.....
kbook Maintenance.....Accounts Receivable.....Accounts Payable.....

ESS 100 PROGRAM LIST

	DESCRIPTION
E78	Interest Apportionment by Rule of the 78's
NU1	Annuity computation program
TE	Time between dates
YEAR	Day of year a particular date falls on
SEINT	Interest rate on lease
AKEVN	Breakeven analysis
RSL	Straightline depreciation
RSY	Sum of the digits depreciation
RDB	Declining balance depreciation
RDDB	Double declining balance depreciation
DEP	Cash flow vs depreciation tables
CK2	Prints NEBS checks along with daily register
CKBK1	Checkbook maintenance program
RTGAGE/A	Mortgage amortization table
TMON	Computes time needed for money to double, triple, etc.
VAGE	Determines salvage value of an investment
ARIN	Rate of return on investment with variable inflows
ONST	Rate of return on investment with constant inflows
ECT	Effective interest rate of a loan
L	Future value of an investment (compound interest)
L	Present value of a future amount
NPAY	Amount of payment on a loan
WITH	Equal withdrawals from investment to leave 0 over
PDISK	Simple discount analysis
TEVAL	Equivalent & nonequivalent dated values for oblig.
NUDEF	Present value of deferred annuities
RKUP	% Markup analysis for items
KFUND	Sinking fund amortization program
NDVAL	Value of a bond
LETE	Depletion analysis
CKSH	Black Scholes options analysis
CVAL1	Expected return on stock via discounts dividends
RVAL	Value of a warrant
NDVAL2	Value of a bond
EST	Estimate of future earnings per share for company
AALPH	Computes alpha and beta variables for stock
RPE1	Portfolio selection model-i.e. what stocks to hold
WRITE	Option writing computations
AL	Value of a right
VAL	Expected value analysis
ES	Bayesian decisions
PRINF	Value of perfect information
ADINF	Value of additional information
UTY	Derives utility function
PLEX	Linear programming solution by simplex method
NS	Transportation method for linear programming
Q	Economic order quantity inventory model
EUE1	Single server queueing (waiting line) model
	Cost-volume-profit analysis
NDPROF	Conditional profit tables
LOSS	Opportunity loss tables
OQ	Fixed quantity economic order quantity model
EOWSH	As above but with shortages permitted
EOQPB	As above but with quantity price breaks
EUECB	Cost-benefit waiting line analysis
FANAL	Net cash-flow analysis for simple investment
PFIND	Profitability index of a project
1	Cap. Asset Pr. Model analysis of project
59 WACC	Weighted average cost of capital
60 COMPBAL	True rate on loan with compensating bal. required
61 DISCBAL	True rate on discounted loan
62 MERGANAL	Merger analysis computations
63 FINRAT	Financial ratios for a firm
64 NPV	Net present value of project
65 PRINDLAS	Laspeyres price index
66 PRINDPA	Paasche price index
67 SEASIND	Constructs seasonal quantity indices for company
68 TIMETR	Time series analysis linear trend
69 TIMEMOV	Time series analysis moving average trend
70 FUPRINF	Future price estimation with inflation
71 MAILPAC	Mailing list system
72 LETWRT	Letter writing system-links with MAILPAC
73 SORT3	Sorts list of names
74 LABEL1	Shipping label maker
75 LABEL2	Name label maker
76 BUSBUD	DOME business bookkeeping system
77 TIMECLCK	Computes weeks total hours from timeclock info.
78 ACCTPAY	In memory accounts payable system-storage permitted
79 INVOICE	Generate invoice on screen and print on printer
80 INVENT2	In memory inventory control system
81 TELDIR	Computerized telephone directory
82 TIMUSAN	Time use analysis
83 ASSIGN	Use of assignment algorithm for optimal job assign.
84 ACCTREC	In memory accounts receivable system-storage ok
85 TERMSPAY	Compares 3 methods of repayment of loans
86 PAYNET	Computes gross pay required for given net
87 SELLPR	Computes selling price for given after tax amount
88 ARBCOMP	Arbitrage computations
89 DEPRSF	Sinking fund depreciation
90 UPSZONE	Finds UPS zones from zip code
91 ENVELOPE	Types envelope including return address
92 AUTOEXP	Automobile expense analysis
93 INSFILE	Insurance policy file
94 PAYROLL2	In memory payroll system
95 DILANAL	Dilution analysis
96 LOANAFFD	Loan amount a borrower can afford
97 RENTPRCH	Purchase price for rental property
98 SALELEAS	Sale-leaseback analysis
99 RRCONVBD	Investor's rate of return on convertable bond
100 PORTVAL9	Stock market portfolio storage-valuation program

☐ **TRS-80 Cassette Version** **$99.95**
☐ **TRS-80 (Mod-I or III), Pet, Apple or Atari Versions** **$99.95**
☐ **TRS-80 Mod-II, IBM, Osborne and CP/M Versions** **$149.95**

ADD $3.00 FOR SHIPPING IN UPS AREAS
ADD $4.00 FOR C.O.D. OR NON-UPS AREAS
ADD $5.00 TO CANADA AND MEXICO
ADD PROPER POSTAGE OUTSIDE OF U.S., CANADA AND MEXICO

NEW TOLL-FREE ORDER LINE
(OUTSIDE OF N.Y. STATE)
(800) 431-2818

AMERICAN EXPRESS VISA

24 HOUR ORDER LINE
(914) 425-1535

H&E COMPUTRONICS INC.
MATHEMATICAL APPLICATIONS SERVICE™

50 N. PASCACK ROAD
SPRING VALLEY, NEW YORK 10977

ASK FOR OUR 64-PAGE CATALOG
DEALER INQUIRIES INVITED

ALL PRICES & SPECIFICATIONS SUBJECT TO CHANGE
DELIVERY SUBJECT TO AVAILABILITY

Diamond Delivers . . . We want to be your software supplier. Let us show you that DIAMOND SOFTWARE can't be beat on . . . . .

PRICE: Our Discount Guarantee. We know of no firm that offers quality software at lower prices. If you see it priced lower, CALL US TOLL-FREE. You'll be pleasantly surprised.

PROMPTNESS: We offer same-day shipment on most items. UPS Blue (Air) available.

PERFORMANCE: Service after the sale. Of course our Technical Service Department is just a phone call away if you need support. Call us for programming tips and friendly advice too!

MONTHLY SPECIALS:

Wordstar $245
Supercalc $189
Volkswriter $149
dBase-II . . . . . $ Call

	LIST	OUR PRICE
Micropro®		
WORDSTAR	$495	**$245**
MAILMERGE	$150	**$ 85**
SPELLSTAR	$250	**$155**
Sorcim®		
SUPERCALC	$295	**$189**
SUPERWRITER	$395	**$295**
SPELLGUARD	$295	**$139**
Visicorp®		
VISICALC 256K	$250	**$189**
VISIDEX	$250	**$189**
VISIFILE	$300	**$245**
VISITREND/PLOT	$300	**$229**
DESKTOP PLAN	$300	**$229**
VISISCHEDULE	$300	**$229**
Information Unlimited®		
EASYWRITER II	$350	**$255**
EASYSPELLER	$175	**$139**
EASYFILER	$400	**$299**
Organic®		
MILESTONE	$395	**$339**
Datamost®		
WRITE-ON	$129	**$115**

	LIST	OUR PRICE
Aspen		
GRAMMATIK	$150	**$129**
Select Info. System®		
SELECT	$595	**$385**
Lifetree®		
VOLKSWRITER	$195	**$149**
Lexisoft®		
SPELLBINDER	$495	**$289**
Microstuf®		
CROSSTALK	$195	**$149**
Condor®		
CONDOR 20-1	$295	**$229**
CONDOR 20-2	$595	**$429**
CONDOR 20-3	$995	**$Call**
Ashton-Tate®		
dBASE-II	$700	**$Call**
Computer Systems Design®		
GL, AP, AR, PAYROLL, Job Cost, Cash Flow Analysis		
1 MODULE		**$475**
2 MODULES		**$895**
3 OR MORE		**call**

NEW! NEW!	LIST	OUR PRICE
Advanced Operating Sys.		
THE PROGRAMMER	$495	**$395**
Continental		
HOME ACCOUNTANT +	$150	**$119**
Perfect Software		
PERFECT WRITER	$495	**$245**
Supersoft		
INVESTMENT TAX PACK	$200	**$169**
THE OPTIMIZER	$200	**$169**
'C' COMPILER	$500	**$395**
Games		
ASTRO-DODGE		**$ 34**
TEMPLE OF APSHAI		**$ 32**
SPACE STRIKE		**$ 25**
SPACE GUARDIAN		**$ 25**
RAM Expansion Boards		
DAVONG		
64K Expandable	$350	**299**
256K	$795	**$595**
QUADRAM QUADBOARD		
64K Expandable	$595	**$495**
256K	$995	**$ call**

TO ORDER CALL TOLL-FREE 1-800-227-0545

In California 1-415-893-7676 International Telex 338139 (attn. 149)
We offer technical support: Call (415) 893-7676

DIAMOND SOFTWARE SUPPLY INC.
484 Lake Park Ave., Suite 123
Oakland, CA 94610

WE ACCEPT VISA, MASTERCARD, AMERICAN EXPRESS, C.O.D.

Also money order, cashiers check, company or personal check (allow 14 days to clear) COD orders add $4.00. Add $3.00 postage and handling. UPS Blue add $3.00 additional per item. Dealer Inquiries welcome. Purchase Orders accepted from qualified organizations.
All items subject to availability, prices subject to change without notice. Calif. residents please add 6½% Sales Tax.
® Manufacturers trademark CP/M is a registered trademark of Digital Research. IBM is a registered trademark of International Business Machines.

Diamond Software . . . . .
The IBM PC Software Specialists



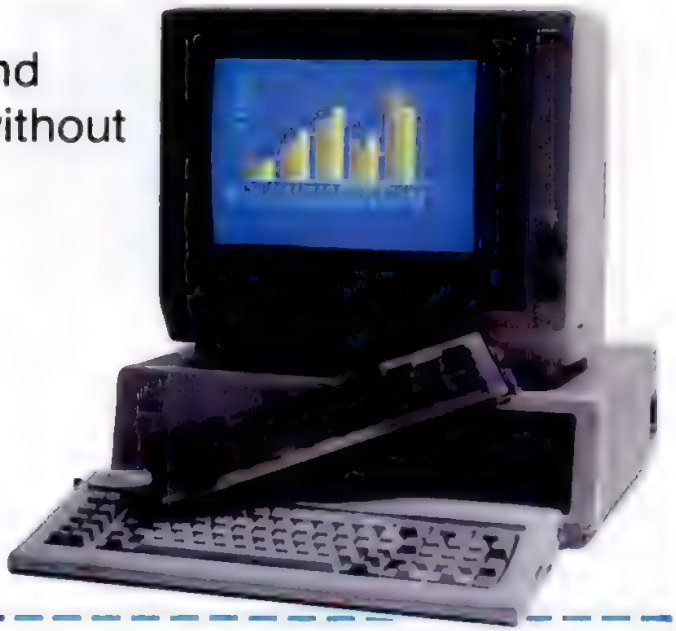
Introducing

The Pixel Sharpener™

COLORPLUS™

The High Resolution Color Graphics Adapter for your IBM Personal Computer

ow! More color, greater clarity and
)-character display capability—without
crificing software compatibility!



xplore The Performance otential Of COLORPLUS™

end For Your FREE emonstration Diskette!

ortant: Quantities are limited. Requests will be filled
ne order received. This coupon must be completely
d out and mailed to the address below. Telephone
uests will be responded to with literature only.

I to:

PLANTRONICS
Frederick Electronics

: PC+ Products
) Hayward Road, P.O. Box 502, Frederick, MD 21701
phone (301)662-5927 Telex 893438

See Us At Booth 3301
COMDEX™
Nov. 29-Dec. 2, 1982
Las Vegas Convention Center
Las Vegas, Nevada

I'm interested in increasing the capabilities of my IBM Personal Computer.

I ___ have ___ plan to buy a _____ personal computer equipped with _____K memory, _____ disk drive(s), a _____ monitor. I want the best to meet my needs. Please send your FREE Pixel Sharpener demonstration diskette* to:

_____
(signature)

Ms/Mr. _____
(name)

_____
(street address)

_____ _____ _____
(city) (state) (zip code)

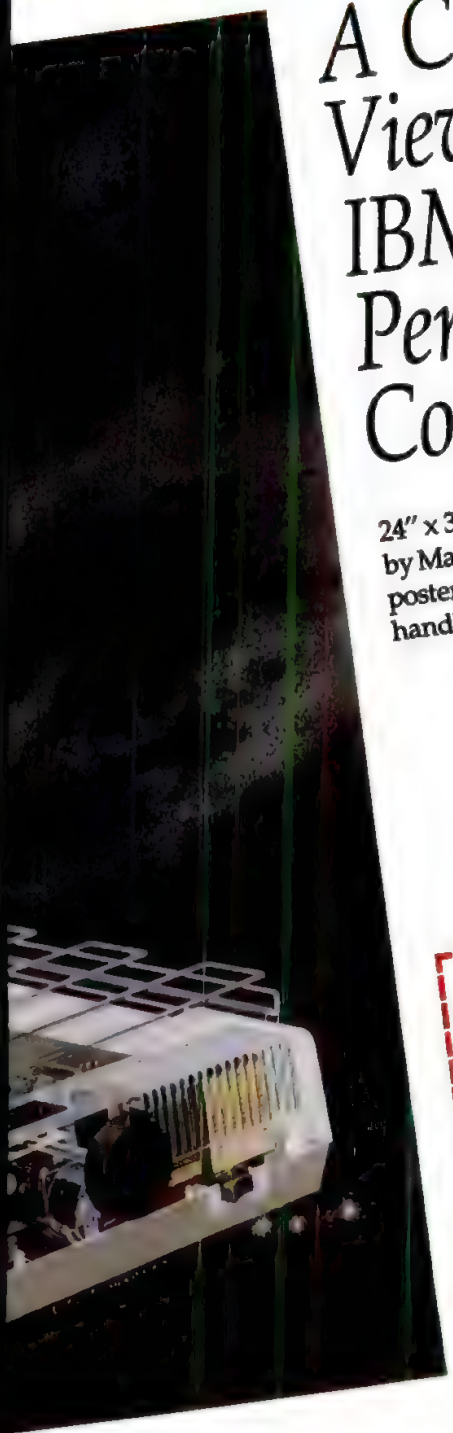
*Standard quality BASF 5¼" floppy diskette or equivalent P

Sharpener, PC+and Colorplus are trademarks of Frederick Electronics Corporation

Uniqu



rt Poster Offer



A Cutaway View of the IBM Personal Computer!

24" x 32" poster, "Inside the IBM Personal Computer" by Mark McCandlish. Printed on quality heavyweight poster stock. Only $10 plus $2.50 for postage and handling.

ORDER TODAY!

MAIL TO: PC Poster
1528 Irving Street
San Francisco, CA 94122

Please rush me ____ prints of Mark McCandlish's "Inside the IBM Personal Computer."
____ prints of unsigned poster at $10 each.
____ Please add $2.50 per poster for postage and handling.
____ Total amount enclosed.

☐ Payment Enclosed
☐ MasterCard
☐ VISA

Interbank # ☐☐☐☐ 4 digit number above your name on MasterCard®

Charge Card # ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Credit Card Signature _____ Card Expires _____ PC6

Please allow 4-6 weeks for delivery.

Name _____

Address _____

City _____ State ____ Zip _____

Fox & Geller's family of programs will double the value of your dBASE II database management system.

dBASE II™ PLU

Plus 1:
QUICKCODE™
The dBASE II Program Generator.

Generate a customer database in 5 minutes with QUICKCODE, the dBASE II program generator. It's that simple.

QUICKCODE writes concise programs to set up and maintain any type of database. Run them as is, or customize them in seconds. You still have **all** the power of dBASE II, and there is **no programming required.** All you have to do is draw your data entry form on the screen and you're in business.

What about the programs themselves? There are programs to add, edit, delete and print records. And there are programs to print forms (up to 96 lines by 132 columns for wide printers), print mailing labels, or transfer data to WordStar™/ MailMerge™. Want **more**? How about programs to do three kinds of data validation, search for records using database keys, and generate customized menus?

On top of **all that**, there are programs to work with portions of your database using your **own** selection criteria and there are four new data types which are not found in dBASE II itself.

Absolutely the most powerful program generator you've ever seen. And the easiest to use.

QUICKCODE: $295.00

Plus 2:
dGRAPH™
The dBASE II Graphics System

Now you can combine database and graphics. With dGRAPH, by far the easiest to use graphics package in existence. Just press one key and you've got your graph.

And what graphs! Sales by month. Expense budget by division. This year versus last year. And each one can be a pie chart, bar graph, or line graph. It's up to you.

Advanced features make dGRAPH as powerful as it is easy. Features like autoGRAPH™, which will *automatically* load dBASE II data, compute scales, draw grid lines, and label charts. Then there's automatic shading and overlay graphs. And more.

dGRAPH brings your database to life.
dGRAPH draws graphs on Epson, Okidata, and a growing list of other popular printers.

dGRAPH: $295.00

Plus 3:
dUTIL™
The dBASE II Utility Prog

dUTIL is Fox & Geller's utility p
dBASE II. dUTIL decreases the
time of dBASE II command file
combines your command files
automatically to produce a fast
time.

When using dBASE II, you
find yourself writing the same i
over and over again. With dUT
put these instructions into a sta
file using your favorite text edit
processor, and automatically us
as many dBASE II command fi
wish.

When debugging a dBASE
file with dUTIL, you can have a
IF/END IF and DO/ENDDO se
automatically indented and alig
they are readable. dUTIL will a
highlight all dBASE II reserved
setting them to upper case.

dUTIL: $99.00

See Us At Booth 118
COMDEX™
Nov. 29-Dec. 2, 1982
Las Vegas Convention Center
Las Vegas Nevada

FOX&GEL

Fox & Ge
P.O. Box
Teaneck,
301 833 (

dBASE II is a trademark of Ashton-Tate WordStar and MailMerge are registered trademarks of Micropro International
QUICKCODE dGRAPH dUTIL dSCAN AutoGRAPH are trademarks for Fox & Geller

The *PC* Speed Test For Printers

A program to test the actual speed of your printer, and results of the test for selected printers.

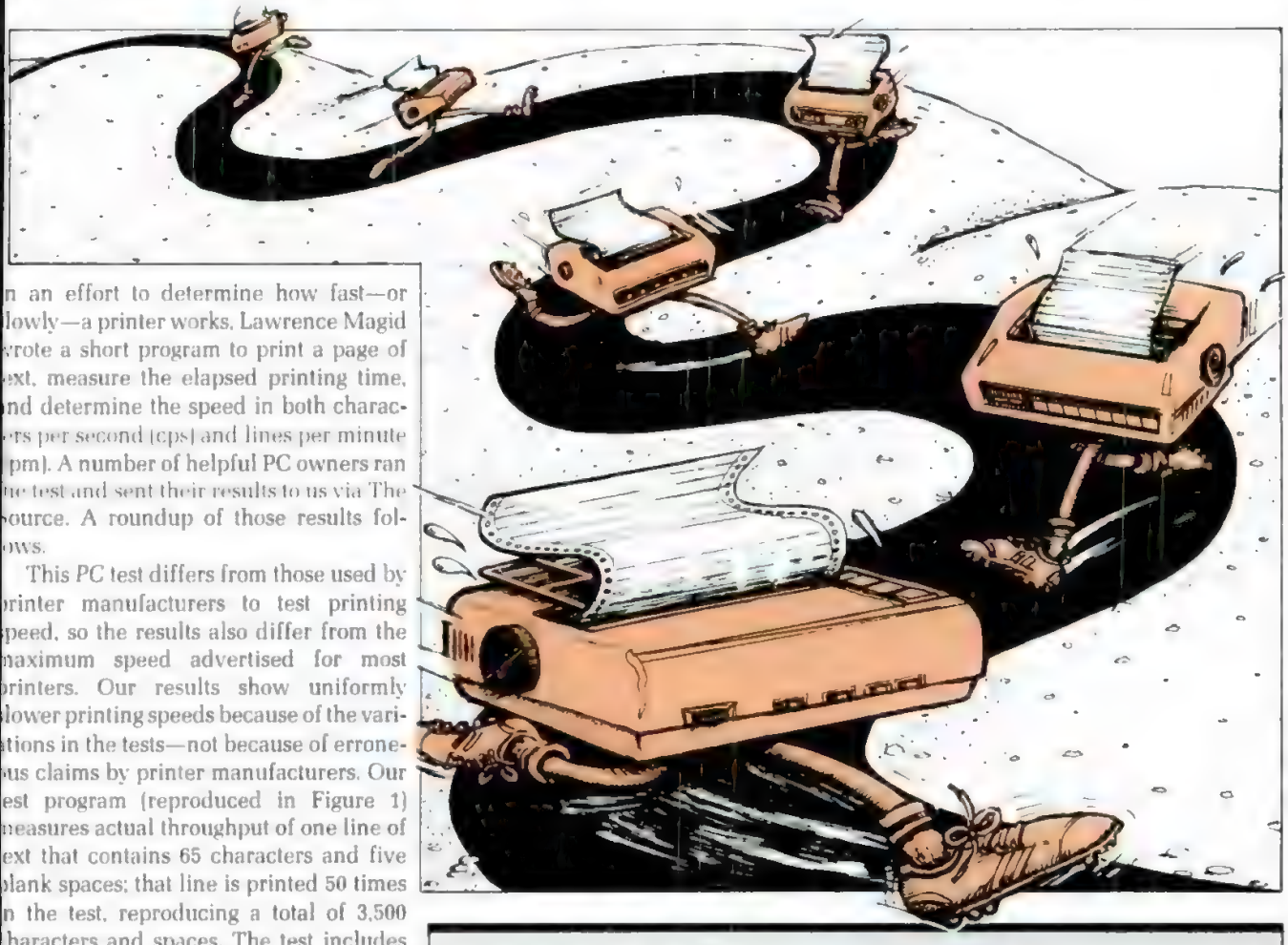


Illustration Don Day

In an effort to determine how fast—or slowly—a printer works, Lawrence Magid wrote a short program to print a page of text, measure the elapsed printing time, and determine the speed in both characters per second (cps) and lines per minute (lpm). A number of helpful PC owners ran the test and sent their results to us via The Source. A roundup of those results follows.

This PC test differs from those used by printer manufacturers to test printing speed, so the results also differ from the maximum speed advertised for most printers. Our results show uniformly slower printing speeds because of the variations in the tests—not because of erroneous claims by printer manufacturers. Our test program (reproduced in Figure 1) measures actual throughput of one line of text that contains 65 characters and five blank spaces; that line is printed 50 times in the test, reproducing a total of 3,500 characters and spaces. The test includes time for a printer to perform carriage returns, a factor not often used in tests designed to measure a printer's maximum speed. The carriage return factor was primarily responsible for the difference between our test results and generally faster speeds advertised for various printers.

The test program is written in BASIC and creates a standard DOS file. It will probably yield different results, usually slower, if it's run from within a word processing or other type of program. This test does not give accurate results if the printer tested has a special print buffer or spooler. In this instance the data in the test goes into the buffer or spooler's storage area instead of directly to the printer. If the buffer or spooler can be disengaged temporarily, the test will work. */PC*

Figure 1: PC Printer Speed Test

```
1     'PC MAGAZINE PRINTER TEST PROGRAM
10    ON ERROR GOTO 690
20    CLS
30    PRINT" PC MAGAZINE PRINTER SPEED BENCHMARK TEST"
40    PRINT:PRINT
50    PRINT"This program is designed to test the speed of your printer."
60    PRINT"It will print 50 lines of text."
70    PRINT
80    PRINT"Each line will be indented five spaces and have 65 characters."
90    PRINT
100   PRINT"At the end of this test, the number of lines, the elapsed time,"
110   PRINT"and the throughput in characters per second and lines per minute"
120   PRINT"will be printed at the bottom of your page and on your screen."
150   PRINT
180   PRINT:INPUT "Specify printer make and model";ZZ$
190   IF ZZ$="" THEN ZZ$="PRINTER NOT SPECIFIED"
200   GOSUB 520
210   PRINT:INPUT"Insert paper in printer and press ENTER";QQ$
220   W$="     This is a Test Line. It has a total of 65 characters. ZYXW{[]|%*&"
230   LW=LEN(W$): 'tests for length of line
```

Continues

Get the most from your EPSON™.

Make WORDSTAR™ work for you.

EXPANDSON

Simple, user friendly menus allow you to set your EPSON™ MX-80, MX-100 or IBM™ Matrix Printer to:

- *Italics* mode
- Compressed print
- E X P A N D E D P R I N T
- **Double-strike** (letter quality)
- Forms length and perforation skip
- Ignore paper-out (single sheet feed)
- Line spacing
- And more!

Use EXPANDSON with WORDSTAR™ and you also get

- True **bold** print
- Connected underscores
- E X P A N D E D T E X T lines for headers and titles
- SUPER AND SUBSCRIPTS A_x^2
- *Italics* and compressed text interspersed through your document
- Line graphics and foreign character set

EXPANDSON

Complete with clear documentation, diskette and reference card available now for

$39

(Check, M.O. VISA, M/C—Cal res add 6% sales tax)

IBM-PC 64K, DOS Basic

Guide to Converting APPLESOFT™ Programs to IBM™ Basic

Get a head start converting your business and scientific programs to run on your IBM. Cookbook, examples & discussion:

Booklet (20 Pages) **$15**

(Check, M.O. VISA, M/C—Cal res add 6% sales tax)

EPSON, WORDSTAR, APPLESOFT & IBM are trade marks of Epson, MicroPro, Apple Computer and International Business Machines respectively

Blue Water Systems

P.O. Box 1877-D
Oceanside, CA 92054
(714) 722-0059

Figure 1: PC Printer Speed Test (continued)

```
240   L=50
250   PRINT #1,
260   PRINT #1,"PC MAGAZINE PRINTER TEST: ";ZZ$: PRINT #1,
270   TIME$="0"
280   FOR I=1 TO L
290   PRINT #1, W$
300   NEXT I
310   T$=TIME$
320   M$=MID$(T$, 4,2) 'defines minutes
330   S$=RIGHT$(T$,2) 'defines seconds
340   LET M=VAL(M$) : REM minutes
350   LET S=VAL(S$): REM seconds
360   TT=(M*60)+S: 'total time in seconds
370   NC=L*LN: 'total number of characters
380   TM=M+(S/60) 'total minutes
390   TP=NC/TT: 'throughput
400   PRINT #1,
420   GOTO=450
430   SCRN=1
440   CLS
450   PRINT #1,
460   IF ZZ$<>"" THEN ZZ2$="Throughput report for "
465   PRINT #1,"Elapsed time =";M;"minute(s) and";S;"second(s) for":
        L;"lines of text."
470   PRINT #1, ZZ2$;ZZ$";"
480   PRINT #1,TP;"characters per second for";NC;"characters."L/TM"LINES PE
        MINUTE."
500   CLOSE #1 :OPEN "SCRN:" FOR OUTPUT AS #1:IF SCRN=1 THEN END ELSE GOTO 430
510   REM
520   CLS
530   PRINT" ////// OUTPUT SELECTION MENU //////"
540   PRINT:PRINT
550   PRINT "1. First printer (LPT1:)"
560   PRINT "2. Second printer (LPT2:)
570   PRINT "3. Third printer (LPT3:)"
580   PRINT "4. First communications device (COM1:)
590   PRINT "5. Second communications device (COM2:)"
600   PRINT:PRINT
610   PRINT"ENTER THE APPROPRIATE NUMBER:";:O$=INPUT$(1):LOCATE,,1:PRINT O$
620   IF VAL(O$)=1 THEN OPEN "LPT1:" FOR OUTPUT AS #1:RETURN
630   IF VAL(O$)=2 THEN OPEN "LPT2:" FOR OUTPUT AS #1:RETURN
640   IF VAL(O$)=3 THEN OPEN "LPT3:" FOR OUTPUT AS #1:RETURN
650   IF VAL(O$)=4 THEN OPEN "COM1:" FOR OUTPUT AS #1:RETURN
660   IF VAL(O$)=5 THEN OPEN "COM2:" FOR OUTPUT AS #1:RETURN
670   IF VAL(O$)=6 THEN OPEN "SCRN:" FOR OUTPUT AS #1:RETURN
680   BEEP:GOTO 610
690   BEEP: PRINT"ERROR - You probably selected an incorrect device."
700   IF ERR=68 THEN BEEP:PRINT:PRINT "Device unavailable, please try again."
        RESUME 610
710   ON ERROR GOTO 0
720   ' THIS IS THE LAST LINE OF THE PROGRAM
```

—J.J.K.

Figure 2: PC Printer Speed Test results for a sampling of printers

Printer	Elapsed Time (min.:sec.)	CPS	LPM
Epson (IBM) MX-80 F/T	0:59	59.32	50.85
Epson MX-80 with Graftrax and MX-Plus	1:00	58.33	50.00
Epson MX-100 with Graftrax-Plus	0:51	68.63	58.82
C. Itoh Starwriter F-10	1:58	30.08	25.42
NEC Spinwriter 5530	1:28	39.77	34.09

—J.J.K.

SOME "CLEAR" ANSWERS ABOUT PRINTER STANDS

Desk Top Printers need space to function. In normal operation the desk-top printer has to load and stack its paper from the same desk space. This causes paper jams, wrinkled printouts, and torn copy. All of this can be eliminated by placing your printer on top of a stand which will allow the feed paper to be placed UNDER the printer.

NOW THE "CLEAR" CHOICE B.T. PRINTER STANDS

The BT Printer Stand has been carefully designed to give you all of the best features in a printer stand for your desk-top printer. The clear stands mixes well with any decor and allows you to see the forms or paper under the printer. The five inch height both front and rear allows maximum paper or forms storage. The material used in the stand is of the highest quality Plexiglass for strength and appearance. Be sure your dealer has the original BT Stand. Do not accept a substitute! Demand the one that gives your printer a CLEAR STAND! Look for the BT on the side.



If your local dealer does not carry the BT Stand, have him contact us for stock, or call or write and order direct:

B.T. Enterprises
10B Carlough Road
Bohemia, N.Y. 11716

516 567 8155 (voice)
516 588 5836 (modem)

Toll Free Outside N.Y.
800 645 1165 (orders only)

Dealer Inquiries Welcome

MasterCard VISA Welcome

B.T. Enterprises is a division of Bi-Tech Enterprises Inc

For Quality Software • Multiple Entry Modes • Comprehensive Documentation

OMRIC

SCREEN MACHINE™

Makes possible high-speed cursor-positioning, scrolling, erasing, and text handling for users of Pascal, FORTRAN, COBOL, and Assembler. (For IBM-PC)

BLINGSPLATZ™

Real-time arcade game named for the eerie horde of intergalactic creatures whose relentless attack on your space patrol will challenge all your skills. (For IBM-PC)

SPACE GUARDIAN™

Traversing the local galaxy to search out and destroy alien spacecraft, you will need logistic and tactical skills in your crucial mission to save planet Earth. (For IBM-PC)

CHAMPION DRAUGHTS™

How about playing checkers against the wily computer? Don't worry... the caliber of the computer's play can be selected to match your own. (For IBM-PC)

GENTERM™

Conforming to most protocols involving character-by-character or line-by-line communication, this package can equip your computer system to communicate with other micro-, mini-, or mainframe computers. (For IBM-PC, Osborne I, or any CP/M Computer)

1268 Main Street, Newington, Connecticut 06111
Tel (203) 666-4240

OMRIC Corp., 1268 Main St., Newington, CT 06111

Please identify the nearest distributor of:
☐ Screen Machine™ ☐ Blingsplatz™
☐ Space Guardian™ ☐ Champion Draughts
☐ Genterm™

Name_____
Address_____
City_____ State_____ Zip_____

BUSINESS/JANET McCANDLESS

Expanding technology has transformed word processing from a fancy name for typing into a complex, growing industry with opportunities for operators, managers, analysts, and consultants.

Word Processing As A Profession

During the early 70s few people understood what a word processor did. The few keyboard operators in the field trained on the IBM MTST and the AB Dick Magna I. They met over brown-bag lunches to swap information and support each other through the frustrations of setting up word processing centers. Today these operators coordinate communications for national and international companies, and manage their own service bureaus. As systems analysts they consult with manufacturers and Fortune 500 clients. They attend word/information processing conferences and subscribe to newsletters and trade journals. Schools now have word processing and communications divisions to instruct the beginner in technical, human relations, and analytical techniques. High schools offer occupational programs and community colleges award AA degrees. Personnel agencies have opened schools for operators to train or retrain on the latest equipment. And the International Information/Word Processing Association (IWP) is planning a certification program.

The word processing profession is acquiring a more formalized structure with higher qualification hurdles for the newcomer. He or she is less likely to wander into word processing, but great opportunities are available to those who pursue them. Temporary agencies and many companies offer trainee positions, and vendors offer entry positions such as market support representative. Some people work their way into word processing from data processing and business programs. The chance to coordinate and integrate systems attracts many newcomers.

The most frequently traveled route to word processing begins at the operator-trainee level. Those who learn word processing at an agency school or junior college will have a few hours of actual training on the equipment and a few concepts to go with them. This acquaintance with machines, manuals, and concepts advances the beginner to the level of trainee, working either for a temporary agency at the low end of the pay scale ($5 to $9 per hour) or for a company that accepts trainees. During the next 2 to 3 months the trainee acquires experience to begin qualifying as an operator.

Whether training in a community college, agency school, or vendor classroom, newcomers should try to get an overview of the profession. Glancing at equipment catalogs and current newsletters will begin to show the scope of the profession.





See the Resource Guide accompanying this article for a list of word processing publications.

Professional Temporaries

When the phone rings at Pat Franklyn Associates Inc., a temporary agency in San Francisco, more often than not a supervisor is calling for a skilled operator. A typical request is for someone who types 85 wpm, is experienced in litigation, knows how to work from a dictaphone, is available from 6 p.m. to 2 a.m., and has 2 to 3 years experience on a word processor.

To qualify as professional temps, operators first work for agencies that will send them out as trainees. They volunteer at companies, trading work for an opportunity to gain experience on a new machine. A temp with strong office and language skills who operates several machines and has professional references can find temporary work that pays $10 to $12 per hour or permanent work that pays $1,600 to $1,700 per month. Those temps who know a programming language or know how to program with their equipment can reach even higher salaries of $15 to $50 per hour.

When converting to new equipment, companies request temps in order to ease transition problems and coach new operators. Temps increasingly develop new ways to customize software to companies' needs. In emergencies, companies rely on temps to produce under pressure and to adapt to a variety of work environments. Approximately as many men as women work as temps, and ages range from early 20s to mid-70s. Backgrounds vary—performers, artists, attorneys, women returning to the work force, retired military, school teachers, and single mothers.

Because equipment is continually becoming outdated or being upgraded, temps must follow the market and anticipate trends. Staying on top demands frequent retraining, which not all temps are willing to do. As a result, new operators trained on the latest equipment often have an advantage.

A new operator must be prepared to learn, and the learning curve may be steeper than one thinks. Temps have to be prepared to cope with the initial insecurity of not knowing where their next paycheck is coming from. They should register at as many agencies as possible and take the opportunity to work at different companies. Every operator has something to teach. Within a year or two, higher pay, flexible hours, and other opportunities await the top temps.

The Corporate Payroll

In a questionnaire prepared in 1980 for the IWP by International Data Corpora tion, 92 percent of the 10,000 businesse surveyed had installed word processors Over half of the companies without wor processors had plans to purchase one i 1981 or 1982. In addition, many large com

Business Basics

Setting up shop as a word processor.

If you want to put your PC to work to support micro-based word processing services, you're going into business. Begin by determining what level of business you can handle. Identify a market and inventory your equipment. Can you produce the volume and quality of work your clients require? Do you have word processing software, disk drives, a buffer for your printer, a good typing stand? Depending on the scale of your business, you may need an answering service or some advice from a bookkeeper.

As with any small business you need to define and study the market sector you've selected. Know your competition; what do they offer and what do they charge? Develop estimates and rate sheets for piece or hourly work and determine what you can produce in an hour (including proofreading). Decide how you want to advertise your services and what it will cost.

Once you've settled the issues of which market you want to address and how to let potential customers know you're in business, develop a checklist based on your determination of the quality of service required and the volume of your market. Select a word processing software package that offers the features your work demands. Options for the PC include *WordStar*, *Volkswriter*, *EasyWriter*, and *EasyWriter II*.

When you examine your hardware, evaluate storage capabilities and printer quality. If you intend to produce long documents or handle a large volume of business, install a hard disk drive. You can purchase 5- and 10-megabyte disks, and up to 20 megabytes are available in separate cabinets. A hard disk allows you to store word processing programs, a spelling dictionary, thesaurus, communications programs, etc. Whether or not you buy a hard disk, copy information onto a floppy as a backup in case of breakdown. Since your disk library will expand as you produce more work, develop a coheren labeling and storage system for your flop pies from the start.

Your final product deserves attentio If your service requires a letter qualit printer, look for one with reliability an speed. Models that print 25 to 55 charac ters per second cost $2,500 to $3,500. Th NEC Spinwriter at 55 characters per sec ond has a good service record and ha demonstrated consistent performance.

To maximize productivity and profits you need software and hardware that en able you to edit and print different docu ments simultaneously. Adding a buffe (16K to 38K) to your printer reduces inter ruptions. The buffer holds documents i memory, leaving your CPU free.

Repairs can take time—time you don have when a client is waiting. If you're depending on your equipment for a liv ing, get a service contract and locat backup alternatives. When you purchas your IBM from an authorized dealer, yo have the option to sign up for a servic contract within 90 days. For an emergen cy backup, one microprofessional sug gests joining a PC user group or posting notice at a dealership; other users in you community may be looking for backups Some dealers will agree to let you use th display equipment in the store.

Before telling your clients what you new arrangement of hardware/software peripherals can produce, give yourse some trial and error time. If you promis dual columns or merged letters, be sur you have the experience to produce them By becoming an independent profession al, you will attain a new level of expertis on your personal computer. You ma discover yourself exploring application in telecommunications, record mainte nance, and data processing. Fun and prof it can be linked easily if you're willing t commit both yourself and your PC.

—J.A.

Handle with confidence.



that you have acquired the IBM sonal Computer, let Sybex books help get the most out of this powerful hine.

STER YOUR IBM PC

IC Exercises for the IBM Personal puter ($13.95) requires no previous wledge of computers or programming. exercises begin with simple mathe- cal operations and lead you step-by- onward to master more complex ness programs. Each exercise is not a useful problem-solver but is also o run.

TECT YOUR INVESTMENT

your computer and peripherals rating at full efficiency. **DON'T** ($11.95) offers non-technical advice on how to take proper care of floppy disks, hard disks, the CRT terminal, the printer, and the actual computer. "Don't is cheap insurance" —Popular Computing.

LET YOUR COMPUTER DO THE WORK

BASIC for Business ($12.95) will allow you to automate general business tasks. Sales reports, financial statements, graphs and charts, depreciation calculations, cost/volume/profit analyses, and more, can all be done easily and with confidence by understanding BASIC specifically designed for the business user.

Sybex books are available at bookstores and computer stores everywhere. To order directly from Sybex, use the coupon or call TOLL-FREE 800/227-2346.
(in Cal. 415 848-8233 collect)

t the most from your microcomputer with Sybex books.

Send me ☐ free catalog
☐ BASIC Exercises for the IBM Personal Computer $13.95
☐ BASIC for Business $12.95
☐ DON'T $11.95
Add ☐ $1.50/Books UPS ☐ 75¢/Books 4th Class
☐ $8.00/Book Overseas Mail
Charge my ☐ VISA ☐ MasterCard ☐ American Express

Card # _____ Exp. date _____
Total Amount Enclosed $ _____
Signature _____
NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

SYBEX
MAIL TO: SYBEX Inc.
2344 Sixth St., PC 11
Berkeley, CA 94710

Real Estate deals may look the same. R.E.I.P. separates losers from winners.





Outside of money, our Real Estate Investment Program (R.E.I.P.) is the most valuable tool you can have at your command in real estate. And that's true whether you are a *beginning investor or a veteran.*

It provides you with the kind of information, guidance and analytical capabilities that help you decide which of two or more similar deals is the one to consider — what type of leverage may fit your situation best — whether a particular offering is a real opportunity or a disguised loser. In other words, R.E.I.P. is designed to give you the insight and expertise that was intuitive to the millionaires who founded huge real estate empires throughout history ... before the time of the Apple II* or the IBM-PC.

With accurate analysis of a property's down payments, amortization, expenses, cash flow, tax consequences and other inter-related information, the knowing investor can make money in boom times or busts ... in inflation, deflation or stagflation. And that's what R.E.I.P. is all about. It takes your input in a simple, logical and easy to enter way ... probes for the necessary facts ... scrutinizes the data and then automatically shows you the possibilities. Thus, you can examine the data, digest the variables, consider the potential payout against your personal goals and financial situation ... and make a more informed decision, one not merely colored by emotion or someone's fast talk.

While there are other real estate software programs available, we believe you'll agree they fail to be competitive with R.E.I.P. Even though others cost more, R.E.I.P. contains many more features and provides the sophistication needed to operate successfully in today's challenging market.

For example, R.E.I.P. is menu operat
(so you save time and effort) — R.E.I.
provides immediate interactive er
checking — R.E.I.P. supports the ne
est real estate wrinkle, creative finan
ing — and R.E.I.P. allows you to defi
negative amortizations.

Furthermore, R.E.I.P. is far ahead
having automatic report formatting
and by permitting multiple methods
income entry. Plus its reports are profe
sional, as they are based on establish
Real Estate industry practices, with all
formation for an investment decisi
presented.

So, if you are engaged in real estate
vesting, or about to be, let R.E.I.P. wo
as your partner. It's the program for a
investor ... a **must** program for t
sophisticated investor. Complete,
disk, with thorough, easy to follow doc
mentation, it's priced at only **$129.9**
Specify the Apple II or IBM-PC versio
at your computer store or from:

DATAMOST

9748 Cozycroft Ave.
Chatsworth, CA 91311 (213) 709-1202



*Apple II is a trademark of Apple Computer, Inc.

nies are renting and leasing machines. is means jobs for word processor train-, operators, specialists, assistant super-ors, phototypesetters, trainers, proof-ders, supervisors, managers, staff an-sts, and information managers.

As office automation increases, word ocessing centers are expanding to en-mpass new equipment and tasks. Word ocessing managers, also known as com-nications managers, now oversee word ocessing equipment, operators, supply, rk output, and information transmis-ns to printers or reproduction equip-nt. This job description demonstrates merging of word processing, data pro-

NEW operators trained on the latest equipment often have an advantage.

sing, and management. Communica-ns managers restructure work flows and esign office space; they develop stor-e, retrieval, and indexing techniques; d they create data bases and libraries. ining, equipment purchase, and equip-nt evaluation fall into their jurisdiction, d so do the personnel problems that ac-mpany the new installations.

Ramona Rothe, a word processing/in-mation manager, administers two city nters for Safeway Stores. She began rd processing in 1969, when executives nsidered word processors "glorified ists with expensive equipment." In the suing years she has demonstrated to nagement how word/information pro-sing saves companies time and money. day she addresses problems of equip-nt compatibility and division support. e is also responsible for data entry ough a timeshare bureau. To stay cur-t. Rothe attends conferences and reads literature that crosses her desk. When ew equipment or application require-nt arises, she searches back through the rature and vendor catalogs to locate the t hardware or software for the job. eping abreast of new publications is a in itself.

Resource Guide

Associations, journals, newsletters, and books allow the beginner to survey the field and the expert to advance. The following list gives only a few of these resources. For a more complete listing, consult the Words "Resource Guide" (June-July 1981).

Word Processing Associations

PROFESSIONAL ASSOCIATION OF SECRETARIAL SERVICES
10650 Irma Dr.
Denver, CO 80233

GOLDEN GATE WORD PROCESSING EXCHANGE
1255 Post St. #625
San Francisco, CA 94109

INTERNATIONAL INFORMATION WORD PROCESSING ASSOCIATION
1015 North York Rd.
Willow Grove, PA 19090

DATAPRO RESEARCH CORPORATION
1805 Underwood Blvd.
Delran, NJ 08075

Books

MICROPROCESSORS FROM CHIPS TO SYSTEMS
Rodnev Zaks
Sybex, Inc.
2344 6th St.
Berkeley, CA 94710

WORD PROCESSING CONCEPTS
Mona Casady
South-Western Publishing Co.
5101 Madison Rd.
Cincinnati, OH 45227

WORD INFORMATION PROCESSING CONCEPTS: CAREERS, TECHNOLOGY AND APPLICATIONS
Marly Bergerud and Jean Gonzalez
John Wiley and Sons Inc.
605 3rd Ave.
New York, NY 10158

INTRODUCTION TO WORD PROCESSING
Hal Glatzer
Sybex, Inc.
2344 6th St.
Berkeley, CA 94710

Magazines

IRM-INFORMATION AND RECORDS MANAGEMENT
250 Fulton Ave.
Hempstead, NY 11550

INFOSYSTEMS
Hitchcock Publishing Co.
Hitchcock Bldg.
Wheaton, IL 60187

MODERN OFFICE PROCEDURES
P.O. Box 95759
Cleveland, OH 44101

WORD PROCESSING AND INFORMATION SYSTEMS
Gever-McAllister Pub. Inc.
51 Madison Ave.
New York, NY 10010

WORDS
International Information Word Processing Association
1015 North York Rd.
Willow Grove, PA 19090

Newspapers

INFOWORLD
Popular Computing Inc.
530 Lytton Ave.
Palo Alto, CA 94301

MIS WEEK
Fairchild Publications
7 E. 12th St.
New York, NY 10003

Newsletters

THE INTERNATIONAL WORD PROCESSING REPORT AND THE INTERNATIONAL COMMUNICATIONS REPORT
Keith Wharton, Editor
Gever-McAllister Pub. Inc.
51 Madison Ave.
New York, NY 10010

—J.M.

Mary Lou Geimer, manager of a word processing center, reentered the job market 6 years ago after training in Skyline College's word processing program. She manages a corporate communications center: modems, telexes, facsimile copiers, phone-in dictation equipment, and CRTs fill the room. Geimer enjoys her job when the center hums with productivity. But she also has to contend with equipment malfunctions and unreasonable deadlines. Inadequate support from vendors and communication carriers can cause frustrating work blockages.

Companies rarely advise their word processors of the latest technology and in-

Do You Use a Printer or Modem?

The average microcomputer "moves" data at 120,000 characters a second. A typical disk drive transfers it at 27,000 CPS. Most printers however plod along at 100 CPS and many modems squeak out 30 CPS. That's quite a drop in efficiency not to mention a waste of computing power!



We've broken this bottleneck with a smart little "white" box called the PRINTER OPTIMIZER® that features a 64,000 to 256,000 character memory buffer. Now you can "print" your inventory in 2 seconds instead of 10 minutes, and no longer will your computer be tied up transmitting or receiving modem transmissions. The OPTIMIZER is smart too. You'll notice a keypad and display in our picture. You can tell the OPTIMIZER to convert data, send control sequences, pause on cue, and more. For example: access all of your printer's capabilities (graphics, font size, forms control, special symbols) with the ease of selecting a station on a pushbutton car radio. Use it to adapt an XYZ printer to your ABC computer running a PDQ word processing program. Run a serial printer or modem from a parallel port. If you can afford and justify a disk drive, then you certainly need our OPTIMIZER to bring your printer, plotter or modem "up to speed" with the rest of your system.

If You Need A Letter Quality Printer



...then consider our affordable yet high quality alternative. Our MEDIAMIX ETI² converts an IBM Electronic Typewriter (and some other brands) into a computer printer. Every office needs a typewriter. So for example, you can buy an IBM Model 50 ET that costs about $1200 and have a superior typewriter, and then with our ETI² have a printer that produces probably the highest quality printed image available. You can even do typesetting like this ad! And for financial printing you can't beat a wide carriage IBM ET. It's a truly cost effective investment. There are a number of arguments in favor of choosing this route over a single use computer printer, and we have an article on this subject you should read.

We apply technology creatively, with insight and with respect for the non-technical end user. Feel welcome to write or call our toll free number for more information.

APPLIED CREATIVE TECHNOLOGY, INC.

2723 Avenue E East, Suite 717
Arlington, Texas 76011
(817)-261-6905
(800)-433-5373

COPYRIGHT 1982

formation. In fact, word processors are ten expected to translate current and ture technology information for corpor officers. One way to stay informed is join a word processing organization.

Rothe is a charter member of the I and organized a local chapter in 1975. T IWP, which in its tenth year registe over 109 chapters (15,000 members) in countries, keeps its members inform

WITHIN a year or two, higher pay, flexible hours, and other opportunities await the top temps.

through its newsletter, *InterComm*, and magazine, *Words*. The annual conferen Syntopican, presents information speci ists and equipment exhibits that introdu new product lines.

For Geimer, the Golden Gate Word P cessing Exchange serves as an inform tion forum. Vendors demonstrate equ ment and encourage operators to disc products. Newcomers looking for jobs t with supervisors. Speakers deliver n information. As Mary Lou says, "Ev though you have never heard about it fore today, tomorrow you'll have to kn about it."

MSR: A Good Beginning

Another side of word processing t appeals to those who grow restless wh seated at a terminal or can't take the e strain of staring into a screen all day working with the vendors of hardware a software. A typical entry position for wo processors is market support represen tive (MSR). Support representatives ma preinstallation calls to explain equipm to clients and prepare them for class Follow-up calls and troubleshooting tea the MSR about the company's prod line. With experience, representati plan and coordinate larger installation

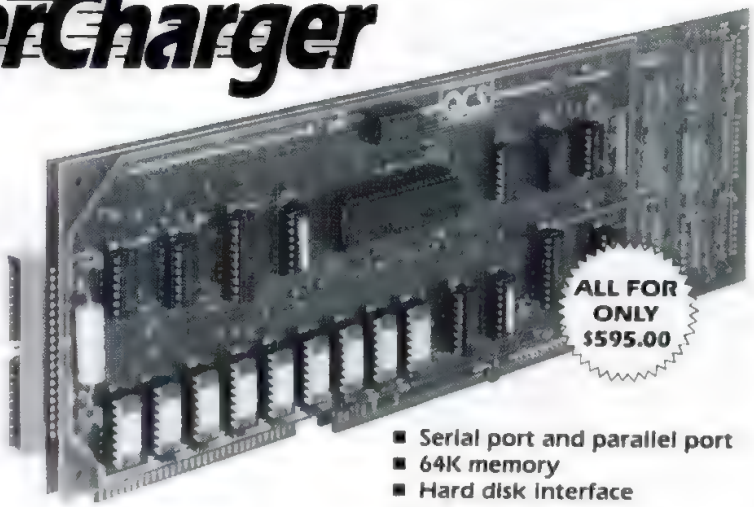
This line of work can often lead t position as a systems analyst. The anal

Computer Advantages for Your IBM PC

Save on Quality Computer Products by Q.u.C.S

BIG BLUE SuperCharger

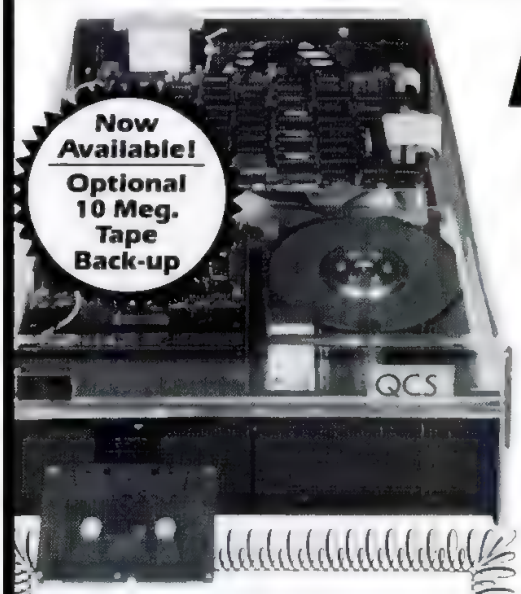
ncreases the power, nemory capacity and xpandability of our IBM PC



ll-on-one board, all-in-one slot, IG BLUE features:

- Dual Access I/O
- Allows for Dual Processing
- 35% more power and throughput an a standard 4MHz Z80 system
- Z80B microprocessor running at 5.5 MHz
- Ability to run thousands of existing CP/M-80 programs
- Serial port and parallel port
- 64K memory
- Hard disk interface
- Calendar clock

... and still leaves room for expansion!



No Risk Hard Disk

Expands the capability of your IBM PC with cost-effective mass storage

The completely assembled and tested system includes:

- Switching power supply
- Winchester drive
- Host adapter card
- Sealed case
- Expansion (enclosure, controller, and power supply designed for future backup hardware or added storage)
- Software
- Auto-attach CP/M
- Hard disk utilities
- Real time clock
- Formatting program (assigns alternates for any weak sectors detected during formatting, assuring the lowest possible error rate)
- Warranty (a full one-year warranty on all parts and workmanship)

Also available:

- New CP/M dynamic generator: configured software; menu-driven for 6-, 12-, 20-, 40-, 80-megabyte drives

The following IBM software can be utilized:

- PC DOS, USCD, CP/M 86 (available soon), UNIX

We think the Q.u.C.S Hard Disk System is so reliable we'll offer you a 10-day money-back guarantee if it doesn't work.* If it is a hardware failure, the manufacturer guarantees another subsystem to your location within 48 to 72 hours, depending on the area of the country.

* We are not responsible for software problems.

20 Megabytes ~~$3,500~~ Call us!

AVAILABLE SOON! UNIVERSAL DISK CONTROLLER

For 5¼" and 8" FLOPPY DISKS

- Single Density/Double Density
- Single Side/Double Side

Computer Advantages, Inc.

566 Broad St., Glen Rock, NJ 07452 • 201/444-2850

Quantity discounts are available



25:01 **TIME SCHEDULER/ORGANIZER** — Timed/untimed activities; recurring events; automatic reminders; time conflict and availability scanning; multiple individuals; daily and period schedules. **$99**

25:02 **MAGAZINE/BOOK REFERENCE** — Indexes any published information; display or print by publication, by author and by topic/subtopic; keyword scanning; page/locations; comments. **$69**

25:03 **FIXED ASSETS MANAGER** — Standard and custom depreciation methods; display or print by location, by class and by asset number; calendar/fiscal year basis; flexible reporting. **$119**

25:04 **FINANCIAL ANALYZER/CALCULATOR** — Bond prices and yields; lump sum calculations; present/future value annuities; balloons;display or print amortization schedules; "what if" formats. **$89**

FLEXIBLE • EASY TO USE • GUARANTEED • PROFESSIONAL QUALITY

Available NOW from your local software dealer — or contact:

SOFTREND inc.
P.O. Box 1462 Charlottesville, VA 22902
(804) 979-8194

Dealer inquiries invited

Kernighan and Ritchie's book, *The C Programming Language*, is the key source for C. Just as fundamental is the C86™ C Compiler.

The C86™ C Compiler is especially designed for the IBM® Personal, IBM® Display Writer, CP/M-86® and MS-DOS®

For further information on the C programming language and the C86™ C Compiler, please contact:

Computer Innovations, Inc.
75 Pine Street
Lincroft, New Jersey 07738
Telephone (201) 530-0995

C86™ is a trademark of Computer Innovations Inc. CP/M-86 is a trademark of Digital Research. IBM and MS-DOS are registered trademarks of International Business Machines.

interviews clients to inventory the equ ment on hand and determine its effecti ness in meeting the client's informati requirements. After analyzing the wo flow and meeting with the client's te force, the analyst recommends equipme purchases and applications.

Support representatives can find po tions as specialists in communications o product line, or as liaisons for typesetti services and supply houses. According Jan Wallace, a systems analyst at Xer companies will be looking for candida with data processing or programmi backgrounds who have account expe ence and proven analytic ability. The fie is new, however, and many companies e courage their employees to train as inf mation specialists.

Cottage Industry/Storefront Business

A word processing service bureau c be run from a home or storefront, depen ing on the size and service requirements the client base and available capital. Bu nesses with complementary services (typ setting, graphics, electronic mail servi

THE WORD processing profession is acquiring a more formalized structure with higher qualification hurdles for the newcomer.

sometimes share rental space or associa in a referral network.

Margaret Smith operates a service b reau from her home. Low overhead he her balance the books, but she says t benefits are more intangible then fina cial. She enjoys using her word process to its maximum potential and earning spect for providing excellent servi Building her client base from referr among small businesses and authors, s has gone on to handle overflow work fr larger companies.

Over the years Smith has learned

Get better looking with your IBM.

Introducing the PC Pedestal™ from Curtis Manufacturing

Available at all ComputerLands and finer computer stores.

Now you can get a real good look at your IBM Personal Computer.

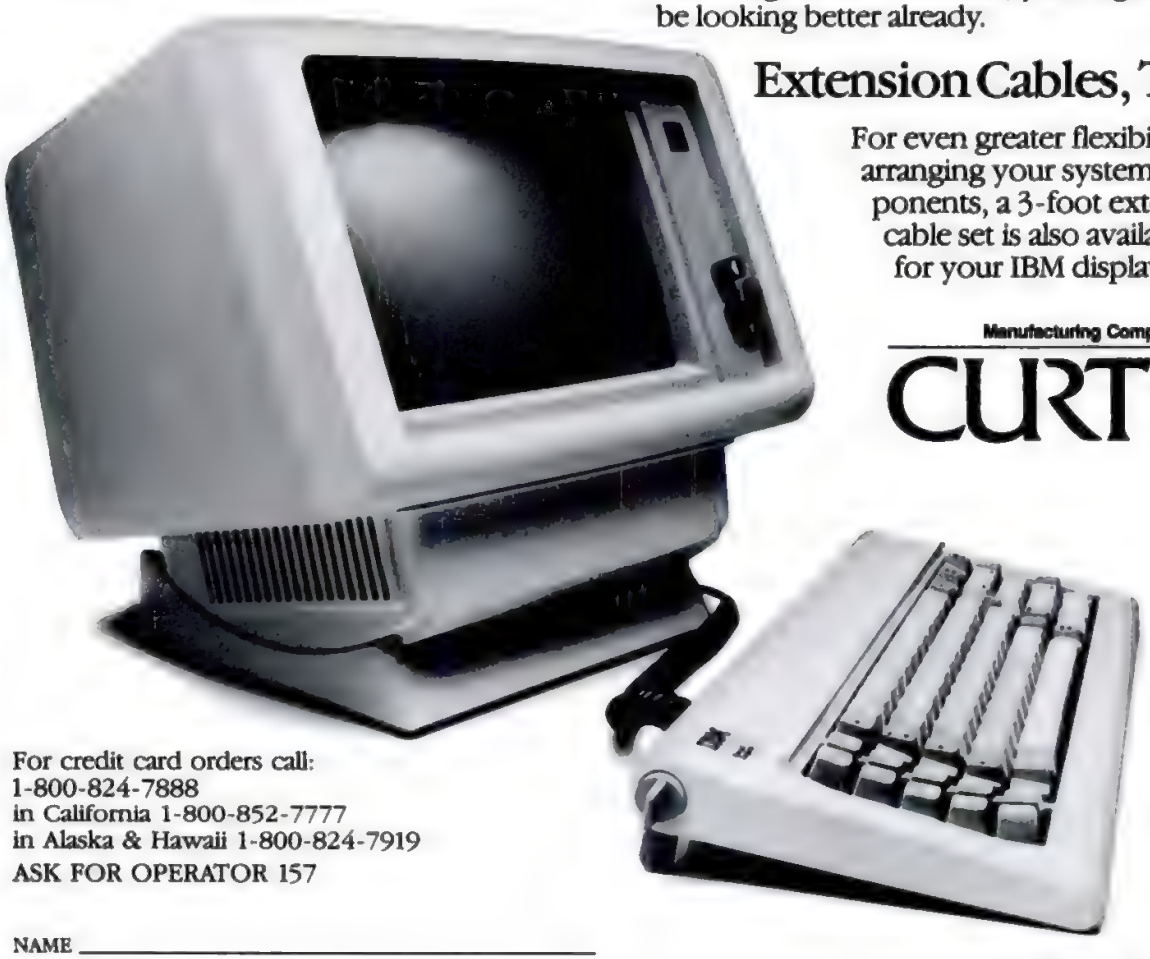
With Curtis Manufacturing's new PC Pedestal™ you can tilt or swivel the IBM display unit to suit yourself.

No more bobbing and weaving to avoid reflections. No more squinting to minimize glare.

The PC Pedestal™ virtually eliminates backache, eye strain, and fatigue. And that results in greater comfort and increased productivity all around.

Developed exclusively for the IBM Monochrome Display, the PC Pedestal™ is a perfect match in style, color and finish.

Best of all, when you see how little it costs to gain these benefits, you're going to be looking better already.



Extension Cables, Too.

For even greater flexibility in arranging your system components, a 3-foot extension cable set is also available for your IBM display unit.

Manufacturing Company, Inc.

CURTIS

For credit card orders call:
1-800-824-7888
in California 1-800-852-7777
in Alaska & Hawaii 1-800-824-7919
ASK FOR OPERATOR 157

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
SIGNATURE _____

	PRICE	QTY.	AMOUNT
PC PEDESTAL™	$79.95		
EXTENSION CABLES	49.95		
Postage per item	3.00		
		TOTAL	

☐ check ☐ money order ☐ Master Card ☐VISA ☐ send additional information

account # _____ Master Card Interbank # _____ expiration date ___/___ mo. yr.

MAIL TO: Curtis Manufacturing Co. Inc., One Curtis Road, Winchester, NH 03470

PCM-6

Interested in the IBM Personal Computer?

If you're interested in the IBM Personal Computer then you need PC magazine.

PC magazine is the Independent Guide to IBM Personal Computers. Each issue is packed with information for everyone interested in IBM Personal Computers.

PC magazine tells you how to put together the best IBM "PC" system and then how to get the most out of it. Each issue brings you hundreds of colorful pages of evaluations, insights, and straight talk from respected experts—professionals in computer science as well as writers, businessmen, lawyers, educators, and many others.

PC covers software, hardware, applications and most every topic of importance to the thousands of IBM Personal Computer users who read it. To ensure that we give you the information you need, PC includes a special "User-to-User" section, as well as a "PC Wish List", and news about IBM Personal Computer clubs, events and publications.

For a limited time, you can subscribe to PC at NO RISK and still receive a 25% discount off the newsstand price. Enter your subscription now. If not fully satisfied when you receive your first copy of PC, simply return your mailing label within 15 days for a full refund.



This is the magazine that tells you all about it.

Name _____

Address _____

City _____ State _____ Zip _____

☐ 1 year $27 (Save $9) ☐ 2 years, $46 (Save $26) ☐ 3 years, $59 (Save $49)

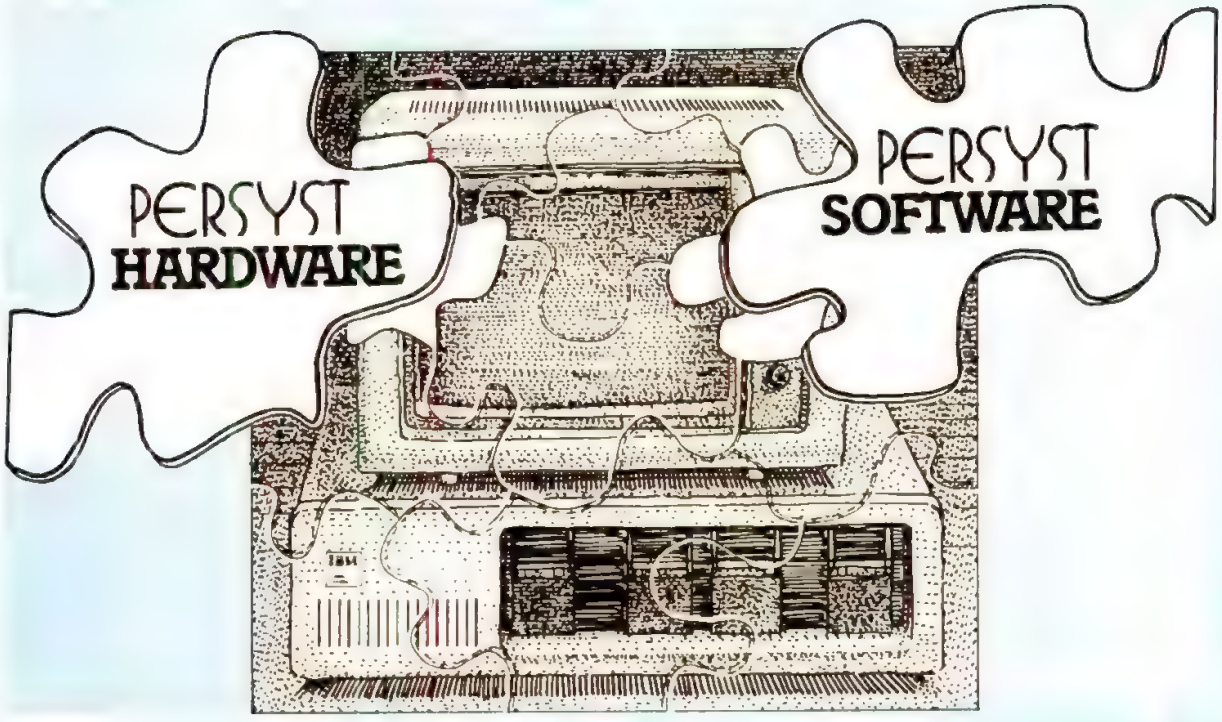
☐ Check enclosed ☐ VISA ☐ MasterCard ☐ Bill me

Card # _____ expires _____

☐ I already own an IBM "PC" ☐ I am thinking about buying one

Send to: **Dept. P5**, PC Magazine
1528 Irving St.,
S.F., CA 94122

Phone Credit Card Orders to:
(Toll Free Number)
California: 800/792-0990, ext. 1136
All Other States: 800/227-3800, ext. 1136



We established our reputation in the IBM add-on market by producing the industry's highest quality memory, communications and multifunction boards. We listened to your requests and now, PERSYST offers solutions to both your hardware and software needs...PERSYST BRINGS YOU THE BEST OF BOTH!

IBM PC HARDWARE

- 64K to 256K Bytes RAM
- Two async serial ports
- Parallel printer port
- All four options upgradable with field expansion kits

- 64K to 256K Bytes
- Field expansion kits in 64K increments
- Parity generate and check
- Fully IBM compatible

- Single board front-end processor
- 8088 microprocessor
- 16K or 64K Bytes RAM
- Up to 32K Bytes EPROM
- Two RS 232/RS 422 async or sync ports
- High speed parallel printer port
- Calendar clock

- Single or dual channel
- Full modem support
- Fully IBM compatible

IBM PC SOFTWARE

- Emulates IBM 360/20 Mod 5 HASP/RJE Workstation
- Up to seven Input and Output Job Streams
- Reader, Printer, and Punch devices dynamically assigned
- Line printer and on-line/off-line print spooling
- Supports line speeds to 19.2 kilobaud
- Utilizes DCP/88

- Instant screen update
- Utilizes all keyboard, cursor and function keys

- Status/help line display
- 38 commands

- Up to 320K Bytes of RAM disk
- Keyboard reset protection
- Up to 50 times faster
- PC DOS compatible
- Application transparent

- No hardware required
- 2K-62K Bytes user assignable buffer
- Supports serial or parallel printers

Ask to see the complete PERSYST line at your local computer dealer.

PERSONAL SYSTEMS TECHNOLOGY, INC.
22957 La Cadena, Laguna Hills, CA 92653. (714) 859-8871

PERSYST...When Only The Best Will Do

Copyright Personal Systems Technology Inc. 1982 IBM is a trademark of International Business Machines Corp.

negotiate realistic deadlines and charge for "rush" jobs. When she first began her business, clients expected that since she worked at home, she would be available beyond normal working hours. Although she enjoys the flexibility of integrating her work with her home life, she does recommend that operators enforce a clear distinction between the two.

When Smith encounters business problems or opportunities, she discusses them with members of the local Professional Association of Secretarial Services. The association addresses her immediate concerns of running a small business more directly than the word processing organizations. In her spare time she reads word/information processing periodicals and newsletters to keep informed.

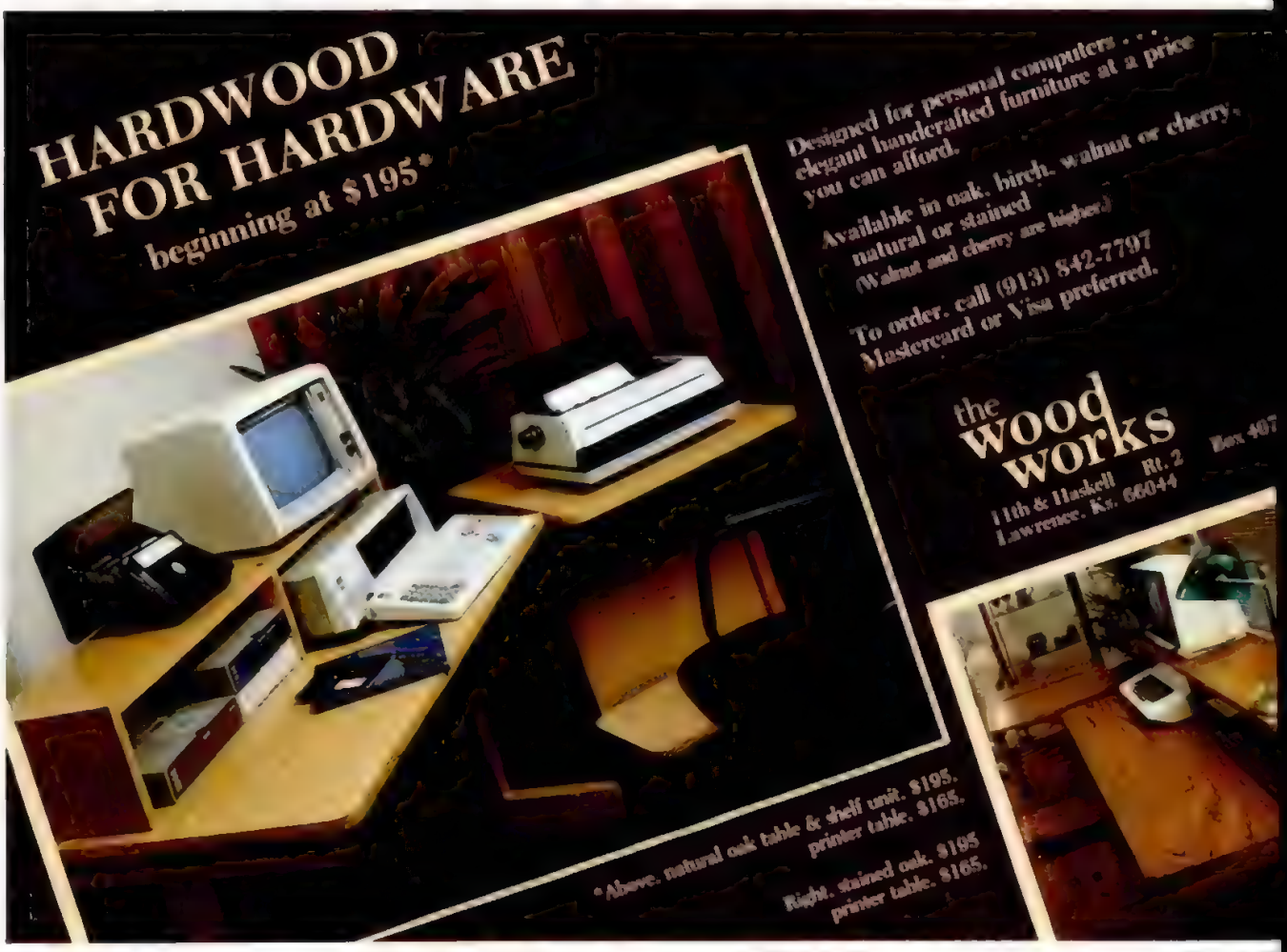
Margaret Oakley was running a typing service from her home when she decided to "expand into a new level of technology and professionalism." She began evaluating word processors and quickly saw how revising, storing, and editing documents removes the drudgery from typing. Running a service bureau out of her home has not only given her more flexibility, but has also solved many of the problems inherent in being a working mother.

Oakley finds word processing interesting. Environmentalists, consultants, academics, and writers form her clientele. When she's not working on a project herself, Oakley rents time on her equipment and trains new users, many of whom don't have the means or need to purchase their own equipment. Last year Oakley began cooperating on an innovative project with the author of a botanical work. Data entered on the word processor is telecommunicated to a computer at a major university. The computer sorts the information, a text compiler program typesets the manuscript, and a desk-top laser printer produces initial proofs.

Sometimes the excitement surrounding communications technology can be distracting. Oakley cautions independ word processors to balance the devel ment of new resources and skills with more immediate requirement of prod ing income. However, once you have veloped a strong client base, maintain reputation for quality work, and secure financial cushion for the slow periods, can experiment with the possibilities your word processor.

If you're into computers, you'd be be into problem solving. Oakley sugg that beginners appraise their appetite problem solving and their ability to tol ate frustration before they commit cap and resources to starting a business.

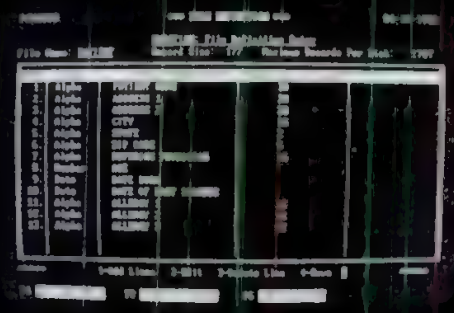
As the manager of a high-volume N York City service bureau, Bea Frai oversees the preparation of customers' ports from word processing to laser pri ing, color xeroxing, and binding. Via te communications she receives docume for clients from remote minicomputers personal computers. Word processors



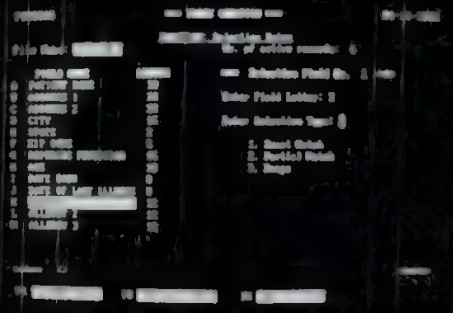
YOUR BEST SOFTWARE BUY: *

TOTAL RECALL™

CREATED SPECIFICALLY FOR THE IBM PERSONAL COMPUTER



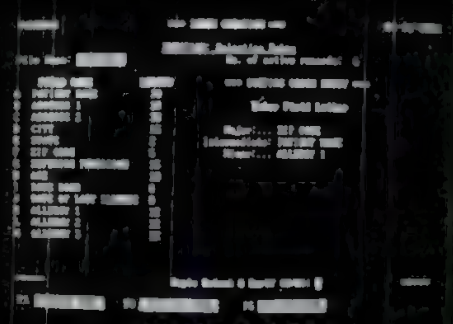
FILE DEFINITION



FAST SELECTION



CUSTOM MAILING LABELS



FAST SORT



FILE MAINTENANCE



SYSTEM MENU

*$129.95

The "User Friendly" Total Recall program is simple to understand, fast to learn and easy to use. You can have this superb, highly efficient program up and running in one hour. And here's what it provides for you . . .

- A Mailing List . . . Total Recall allows you to define your format with 15 different entries (up to 30 characters each).
- Total Compatibility with Word Star and Mail Merge
- A highly efficient, simple to use Inventory System
- An Invoice Register System . . . who, what, where and when a person or company ordered.
- An extensive, totally documented Tutorial
- Custom Mailing Labels . . . create your own configuration.
- A virtually Unlimited File Size
- 15 Different Ways to extract information from any file
- Standard D.O.S. 1.1 files
- Supports most Winchester Hard Disc systems

Total Recall is now available at your local IBM computer dealer. Ask for a demonstration . . . See for yourself why it's your very best software buy!

PCEZ

1867 Green Bay Road
Highland Park, Illinois 60035
(312) 432-1116
"We support our software products."

PUT YOUR IBM PC TO WORK WITH

THE DATA REPORTER

With the Data Reporter you receive an advanced user-friendly data management tool that delivers more power and flexibility than any other database system available for the IBM Personal Computer. This information management package consists of a unique combination of high speed machine language routines and BASIC programs. The modified "Program Generator" set-up program easily customizes the package to handle your data your way. Powerful search and sort routines let you manipulate your files to your requirements. The revolutionary "Soundex" search routine is included so you do not have to know the exact spelling of the data you are trying to access. Special features include fast data entry and update, calculations, data analysis, label maker, merge, data and program file back-up, reformat, global editing, and more. The report generator has many word processing features which allow you to print reports, form letters, and data in a variety of ways, with or without calculations. The Data Reporter uses single keystroke, menu driven commands with easy to follow prompting; non-programmers will have no problems using this powerful package. Sophisticated error avoidance and recovery techniques prevent undesired results. The BASIC language programs can easily be modified for those desiring special applications, while the machine language routines provide unexcelled speed. Use The Data Reporter for any of your data handling needs.

The program innovators at Synergistic Software will bring you this and other helpful, as well as entertaining, IBM PC software.

Send for detailed information to:

Synergistic Software

830 N. Riverside Dr., Suite 201
Renton, WA 98055
206-226-3216

format the data and then print or forw
it to a typesetter.

Production orders for brochu
menus, repetitive letters, programs, tr
ing guides, and corporate overflow w
demand Fraitag's full attention. She re
on her bosses to study the market and
view technical literature. The owners
lieve you can't just sit at a desk and ex
to know about equipment, especially if
intend to service 80 percent of the N
market.

The Consultant

As in most businesses, word proces
requires expert consultants. Consul
can be a good choice for entreprene
who aren't attracted to the idea of a cot
industry or storefront business.

Carol Lacey, a former teacher wh
now a word processor, intends to becor
consultant who trains operators in
vanced applications and advises then
equipment selection. She began word
cessing 1 year ago. Since then she
trained on four machines and registe
with 15 agencies. To help in her consul
work Lacey has been preparing a log
compares machines, applications,
peripherals. She likes to trade informa
with other temporaries and often vo
teers to demonstrate equipment to new
ers. As a consultant she believes pract
rather than theoretical knowledge
help her clients.

Frontier Market

Men and women who never imagi
they would use or want to use a compu
now converse on the relative merits
their equipment and argue about ma
trends. With the number of new entra
in the profession, the supply/demand
tio for word processors has tempora
stabilized. Changes in technology co
unbalance the current equilibrium
outstrip tendencies to formalize the p
fession. The person who uses his or
imagination will be the one workin
years from now, as the opportunities s
and as technology and the information
dustry continue to expand.

*Janet McCandless is a researcher, wri
and word processor for Sunflower Co
positaers, an information and word p
cessing business in San Francisco.*

How to get a fast 300% return on your IBM-PC investment.

ompared with COBOL interpreters, mbp's new COBOL Compiler runs programs four times er. With mbp on your IBM-PC, applications t used to take four hours now take one; that's a 300% return on investment.

How is it possible?

Interpreters translate and execute a gram one statement at a time, every time program runs. mbp's COBOL Compiler erates machine language object code, he entire program is translated only once; hen can be executed as often as you want fast single step—with no retranslation.

Gibson Mix: BENCHMARK RESULTS Calculated S-Profile *(Representative COBOL statement mix)* Execution time ratio		
mbp COBOL	COBOL X	COBOL Y
1.00	4.85	7.04

And it's COBOL—

the language for commercial and ministrative applications. Standardized l maintained like no other language. w COBOL brings mainframe benefits business microcomputer users.

mbp COBOL meets ANSI '74 ndard. It features a full range utilities: 'Compiler Intelligence' omatically corrects simple syn- errors; Run-time Debug; Index eck and Array-Bound Inspection; ing options allow source and ject code, map and cross- erence tracking. 500+ error ssages insure user-friendliness. ere is plenty of existing software, l maximum portability protects tware investments.

Just $500.

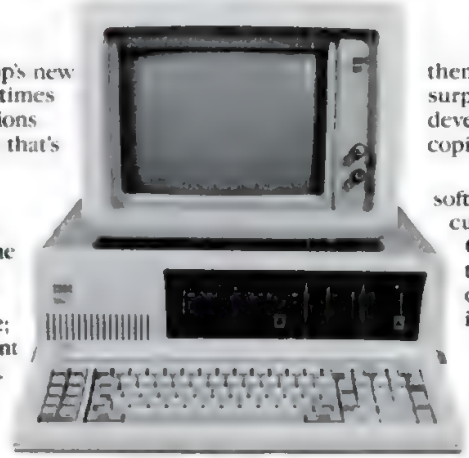
Compare mbp's advantages, then compare prices; you'll be pleasantly surprised—again. Plus, application software developers can make up to 50 run-time package copies with no royalty charge.

mbp has twenty-five years worldwide software experience and twelve(+) in mainframe custom COBOL implementations. The mbp COBOL Compiler makes this valuable expertise available for micro users. Take advantage of it, and start getting a 300% return on investment, today.

mbp COBOL is available now

for the IBM-PC* or any microcomputer with MS-DOS,* iRMX-86,* or CP/M-86;* soon for OASIS-16.*

*IBM-PC is an IBM TM, MS-DOS, Microsoft TM, iRMX 86, Intel TM, CP/M 86, Digital Research TM; OASIS-16, Phase One Systems TM



IBM-PC +



mbp COBOL.
300% faster–just $500.

mbp™
SOFTWARE AND SYSTEMS TECHNOLOGY INC.

7700 Edgewater Drive, Suite 626
Oakland, CA 94621 Phone 415/632-1555

Please send me complete mbp COBOL information and performance data.

Name _____

Company _____

Address _____

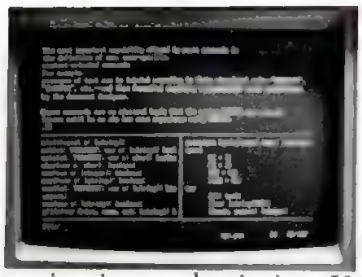
City, State _____

_____ Zip _____

OEM & distributor arrangements available.

Visit us at COMDEX booth 382, 384.

Edix™ + Wordix™ isn't the most popular, most easily learned or leas expensive word processor. It's only the best.

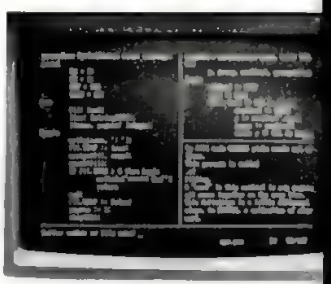


Editor + Formatter = Word Processor

Most word processors try to do too much at once: text entering and correcting, line filling, pagination and printing. Unfortunately, they don't have time to do anything really well. Edix + Wordix divides word processing into *editing* and *formatting*. So it does things very well indeed.

Edix. You use Edix to enter and correct your document (or program). Its advanced features include multiple screen windows, multiple buffers, side-to-side scrolling, block moves, powerful patterns for searching, and a help key. There's even an online course to get you started. It's the world's finest microcomputer screen editor.

Wordix. Once you've prepared your text with Edix, imbedded commands tell Wordix how to format it into lines, paragraphs, pages and sections. Wordix automatically hyph ates, positions footnotes, numbers sections an builds a table-of-contents. It can incorporate information from data files into your documer so you can use your mailing list to generate form letters. It lets you predefine customized formats for letters, memos, reports and books.





In short, you can concentra on *content* while Wordix tak care of *form.*

Edix + Wordix. Your documer are too important to tru to a word processor th does everything at once an nothing well. You nee an editor that know editing, and a formatte that knows formattin You need Edix + Wordi

Call or write f detailed specification Requires 128K IBM P with DO

EMERGING TECHNOLOGY

Emerging Technology Consultants, Inc.
Box 154 Louisville, Colorado 80027 303 447-9495

Available at ComputerLand® and other fine computer stores

™Trademark of Emerging Technology Consultants, Inc



METAFILE* takes your PC *beyond computing.*

METAFILE is the high-level language that provides all of the software facilities a PC owner requires in a *single integrated architecture.* METAFILE enables you to go. . .

BEYOND PACKAGES — Standard facilities include:
- Data base management
- Word processing
- Impromptu inquiry
- Forms data entry
- Sorting
- Report generation
- Mailing lists • Spread sheets
- Network communications

BEYOND WORD PROCESSING — Any text can be a:
- Document • Menu
- Form • Procedure • Report
- Active text with embedded descriptions

BEYOND PROGRAMMING — Develop applications with:
- Easy path from prototype to production
- Documentation produced within the same system
- Immediate turnaround
- Built-in tracing and troubleshooting aids
- Visual prompting

BEYOND DATA BASE MANAGEMENT — Standard facilities include:
- Virtual updates
- Data conversion to foreign formats
- Data base reorganization
- Query by example
- View management

nore information on waking up your sleeping giant, get ailed brochure. Better yet, order a demo version of FILE. Call or write today (507) 867-4440.

METAFILE™, Olmstead Federal Bldg.
Chatfield, MN 55923.

Also available on VECTOR

Beyond Computing™

*METAFILE is a registered trademark of SUNSOR based SYSTEMS, Inc.

LEGAL/DANIEL REMER

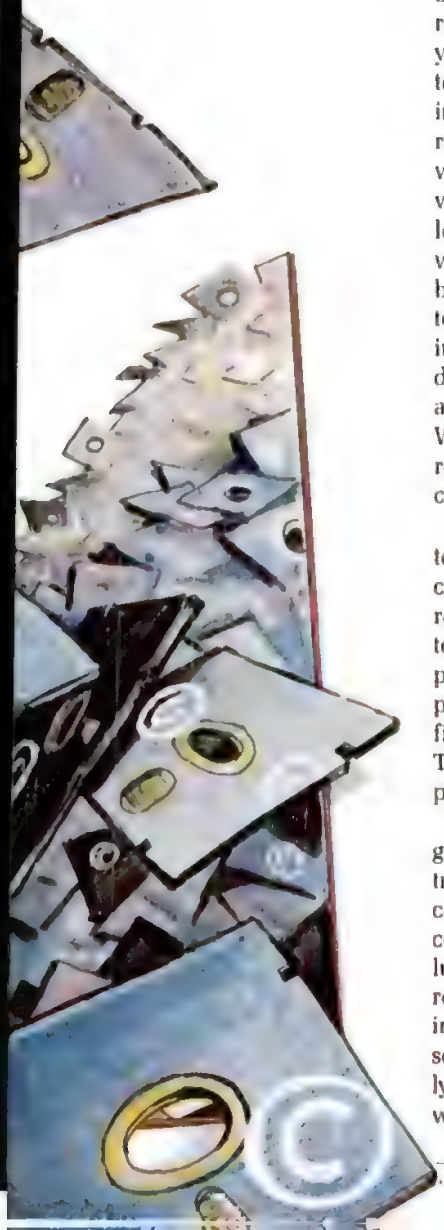
How To Copyright Your

To file or not to file, subject or object code, The Rule of Doubt—Part Two.



vare

This is the second of a three-part series on copyrighting software. Part One explained what a copyright is, how to use proper copyright notice, and where to send for Copyright Office forms. Part Two details exactly how to fill out those forms and resolves issues in connection with copyright law.



Many people place a copyright notice on their software, but they don't take the extra step of registering it with the U.S. Copyright Office. Unlike patent and trademark registrations, copyright registration is easy, inexpensive, and can be done without a lawyer. Forms may be obtained free from the U.S. Copyright Office and the registration fee is only $10. Why doesn't everyone register? There are two reasons besides sheer laziness. Some lawyers recommend that software be registered only if and when there is a copyright infringement. At that time the software is registered to gain access to the courts, which will not hear an infringement suit without registration. Some serious problems may result with this approach. If you wait to register, you lose the possibility of being awarded attorney's fees and statutory damages resulting from the copyright infringement. You will also have a more difficult time obtaining payment for damages that occurred before you registered. While late registration is better than none, registering late weakens the punch of your copyright.

The second reason people fail to register is the fear of making a program's source code accessible to the public. When you register, the Copyright Office requires you to submit the first and last 25 pages of your program listing with your application. The program listing is kept at the Copyright Office and may be inspected by the public. The public is not allowed, however, to photocopy or hand copy the listing.

People have suggested clever ways of getting around the source code problem: triple spacing the listing, adding lines of comments or remarks, and scrambling the code. The problem with these creative solutions is that they also circumvent the reason the Copyright Office wants the listing in the first place. The office wants to see that the program is, at least superficially, a work of original authorship. It also wants some way of identifying the program in the event of a registration date dispute. So reconcile yourself to filing the first and last 25 pages of program listing.

Object Vs. Source Code

Now comes the big question: Do you have to deposit your source code or will object code suffice? The good news is that the Copyright Office will accept object code deposits. The bad news is that the object code is accepted under the Copyright Office's "Rule of Doubt."

The Rule of Doubt is less ominous than it sounds. It means the Copyright Office can't determine from the object code whether the code is an act of original authorship (see last month's article for a definition of original authorship). The office must take your word for it. Write a letter (see Figure 1) stating that your program is an act of original authorship, and submit it with the application.

COPYRIGHT registration is easy, inexpensive, and can be done without a lawyer.

The Rule of Doubt doesn't have much impact on your application. Your certificate will look the same and everything will be the same as a source code registration except that a separate folder in a Copyright Office file cabinet will contain an interoffice memo stating that the application was accepted under the Rule of Doubt. This folder is not the same as the one containing your original application. Should you ever find yourself in court, the opposing lawyer may be able to track down this memo. If the case is simply one of program copying, the memo won't do the pirate much good since it doesn't cast doubt on the validity of the copyright. If the case involves stealing a specific but small number of lines of code, you are likely to have a difficult time proving your case anyhow, but the memo could harm your case more.

On the issue of whether you should de-

NEW!



Kiss the 5¼" floppydisk goodbye!

Amdek has revolutionized data storage for personal computers with the new AMDISK-3 Micro-Floppydisk drive system. The system consists of 2 drives and a power supply, fully compatible with 5¼" floppy disk drives. The 3" disk is encased in hard plastic, protected from dust and fingerprints, and it's easy to mail.

Just write, or call to receive our data sheet on the new AMDISK-3 Micro-Floppydisk Cartridge system.

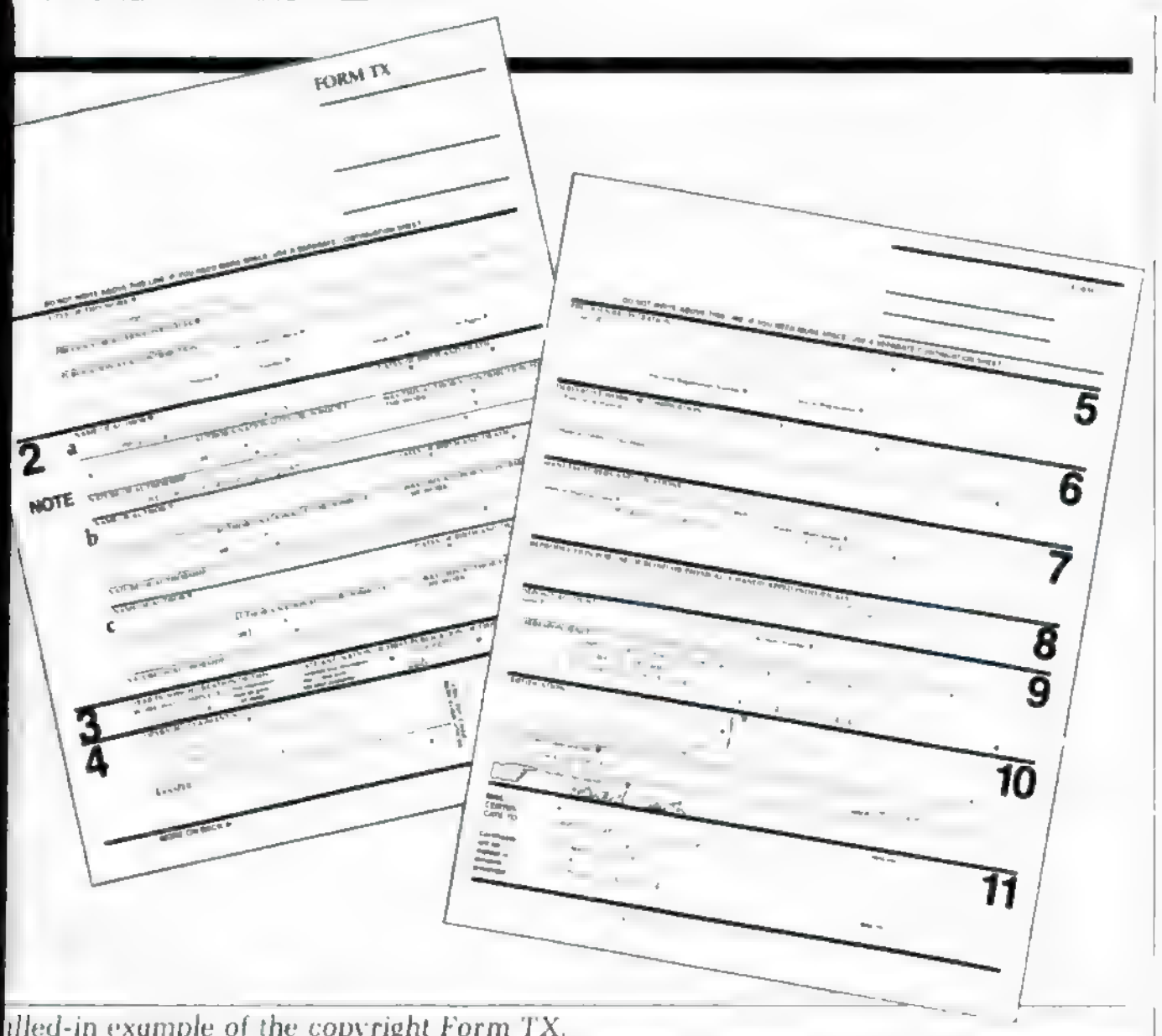
- 1 Megabyte (unformatted) storage capacity
- Track-to-track compatible with 5¼" flopp disk drives.
- 3" shirt-pocket sized disk cartridge.
- Drive has built-in power supply.

2201 Lively Blvd. • Elk Grove Village, IL 60007
(312) 364-1180 TLX: 25-4786

AMDEK CORP

Amdek . . . your guide to innovative computing!

Copyrighted material



illed-in example of the copyright Form TX.

sit object or source code, I generally rec- mend filing the source code. Bear in nd that copyright law doesn't protect as; it protects only the expression of as. If someone wants to copy your pro- m for resale, he or she can copy it from lisk more easily than by memorizing ır code.

If you are concerned about protecting ır ideas, ask yourself if the idea really is ique and worthy of protecting, or if it's t a more elegant expression of a gener- y known practice. If you have to admit t the value of the idea is in its manner of pression, you should probably protect t expression by filing. If the value of the ea is in the concept itself, then filing may t be for you. There are relatively few ique ideas and many well-designed ograms. Unique ideas are more readily otected through trade secret protection, hich I will discuss in Part Three of this ries.

If you have a program that is not mass arket, you may have another good rea- n for not filing. A combination of trade cret and contract law may be a prefer- le defense against piracy. This subject is so covered in Part Three.

reparing an Application

To apply for certification you need pyright Office Form TX. Write to the Copyright Office, Library of Congress, Washington, DC 20559; or call (202) 287-8700 after hours and leave a message. I suggest that you ask for several copies. The forms should arrive about a week after they have been ordered.

Form TX is easy to fill out. Use a typewriter and enter the name of the program on the line indicated. See if the rest of box 1 applies to you. It probably doesn't, so go on to section 2.

Historically, section 2 has caused confusion. It asks for the name of the author(s) of the program. If you are the author of the program and own the copyright, put your name on line *a* of section 2. However, if you wrote the program for your employer or as a commission for someone else, the program is a work for hire and the author is the employer—not the programmer.

Whether or not a program is a work for hire is sometimes a matter of dispute. If the employer and programmer disagree, a lawyer should be called in to clarify matters. Let's assume there is no disagreement and go on to the rest of section 2. If the program is a work for hire, ignore the question about dates of birth and death.

Section 2, line *a* asks for a brief description of the material created by the author. If you wrote the whole program, you might say, "wrote the entire software program."

If you had a coauthor, state so, and com-

MAZEMANIAN DEVILS

.... a maze game for the IBM PC

SYSTEM REQUIREMENTS

- 64K
- Single diskette drive
- DOS
- Any 80 character display



STANDARD FEATURES

- 5 Mazes
- 1 or 2 Players
- 4 speeds
- Keyboard or Joystick Controlled
- Saves top ten high scores

OPTIONAL FEATURE

BYOM (Build-Your-Own-Maze)
Allows you to design your own devilish mazes for use with Mazemanian Devils

GAMEMANIA, INC. Ω

P.O. Box 413
Timonium, MD 21093



Please send me

☐ MAZEMANIAN DEVILS 29.95
☐ BUILD-YOUR-OWN-MAZE 14.95
☐ BOTH (save $5.00) 39.90

(Maryland residents add 5% sales tax)

Name _____
Street _____
City _____
State _____ Zip _____

☐ Check or Money Order
☐ master charge ☐ VISA

Card# _____
Expiration Date _____

plete the questions for each additional author who will share copyright ownership.

Section 3 is self-explanatory except for the word "publication." In copyright law the publication date is the date the program first became available to the public, not the date of manufacture.

Section 4 asks for the names of the copyright claimants. These are the same people you listed in Section 2 unless the authors transferred their ownership. If the parties aren't the same, state how the claimant(s) obtained ownership of the copyright. Ownership could be transferred by "written contract," "will," or "assignment," or one might have won the rights in a poker game.

Section 5 applies only if the program is already registered. Previous registration might have occurred, for instance, in cases of copyright transfer or program modification. Section 6 is used when you modify a program after registering it. For example, you may have designed the program to run on an IBM PC but made some changes so that it would run on an Advantage. If this section applies, briefly describe the original program and the modification work that was done.

REGISTERING late weakens the punch of your copyright.

Section 7 may be skipped if you are registering software. However, there is nothing wrong with listing names and addresses of people, including yourself, who are manufacturing your software.

It is unlikely that section 8 will apply to software registration. If it does apply, enter the information.

Section 9 should show a current address. The Copyright Office may need to contact you about your application, so be sure to include a daytime phone number.

Section 10 asks you to certify that the information in the application is correct. If you are the author, including a work-for-hire author, check the *author* box.

Finally, fill out section 11. This is a mailing label and will appear in the envelope when the approved application is returned to you.

Figure 1. Sample Letter for Statement of Original Authorship

```
Chief of Examining Division
U.S. Copyright Office
Washington, DC 20559

(type date here)

Dear Chief Examiner:

Enclosed please find:
    1. A completed registration Form TX for the computer program entitled (type yo
    program name as shown in section 1 of Form TX).
    2. The first and last 25 pages of the program in the form of computer listing of
    object code

I hereby certify that the above named program and the accompanying deposit are works
authorship meeting the requirements of 17 USC 102(a).

Sincerely,

(sign your name)

(type your name)
```

Figure 2. Sample Letter for Graphics Registration

```
Chief of Examining Division
U.S. Copyright Office
Washington, DC 20559

RE: Request for Special Relief

(type date here)

Dear Chief Examiner:

Enclosed please find:
    1. Copyright registration (Form PA) for the audiovisual work entitled (type the na
    of your program here).
    2. A videotape of the work including its demonstration and play mode. The videota
    includes a view of the copyright notice as it appears on the audiovisual work. It wi
    play for (fill in number) minutes.

A brief synopsis of the work is as follows: (Include here a short description of the gam
e.g., a maze appears on the screen. A small diamond-shaped object runs through the maz
controlled by the player. The goal is to get through the maze without running into t
walls.)

Please treat the enclosed identifying material in the form of videotape and abo
synopsis as fulfilling the deposit requirements associated with this copyright regi
tration.

Sincerely,

(sign your name)

(type your name)
```

Other Considerations

Let's assume that after carefully analyzing your program, you've decided to register your source code. If it makes you feel better, strip the comment (or REM) statements from the program before listing. I know of one copyright case that w won because of a misspelled word i comment. The original program contain an accidental misspelling that reappea in the pirated copy. When you prep your listing be sure the copyright not appears at the top of the first page. Th list the program. Only the first and last pages of code are required.

TRANSFORM YOUR IBM® TOTALLY
GRAPHICS + BUFFERING + TERMINAL

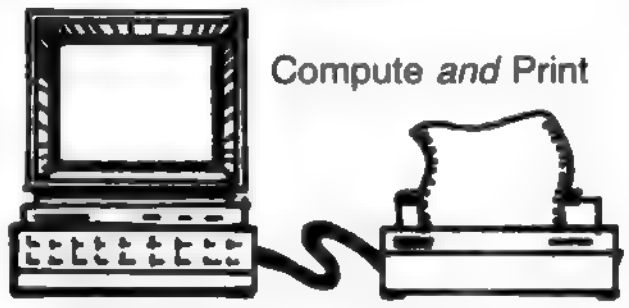
Computer—Printer Output Buffering

- Buffer sizes software selectable 16K, 32K, 48K, 64K
- Uses any standard memory expansion boards
- Buffer size reselection for different sized output jobs, at keyboard level
- Buffers time consuming graphics reproduction as well as text
- Print speed no longer determines processing speed of your PC. Printer virtually functions *independently* of the computer.

Dot Matrix Graphics Hard Copy Reproduction

- Full Color or B/W tones
- Uses any standard memory expansion boards
- All Hires and Medium resolution modes
- 4 dot scale sizes for 4 different blow-up sizes
- Whole graphics screen, or any subsection can be reproduced
- Picture rotation, across or along length of page
- 'Shift'-'PrtSc' feature to make snapshot copies at keyboard level
- Inversion of color/BW for any graphic mode
- Colors on Prism 132/80 can be swapped and mixed as desired
- Compatible with:
  EPSON MX-80-80FT-100
  NEC 8023
  C-ITOH PROWRITER I/II
  OKIDATA 82, 83 with graphics
  IDS PRISM 132/80, with color and without color options

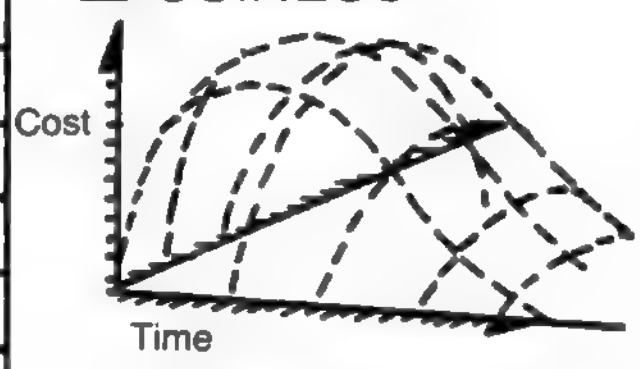
MICROCOMPUTER
Simultaneous



Compute *and* Print

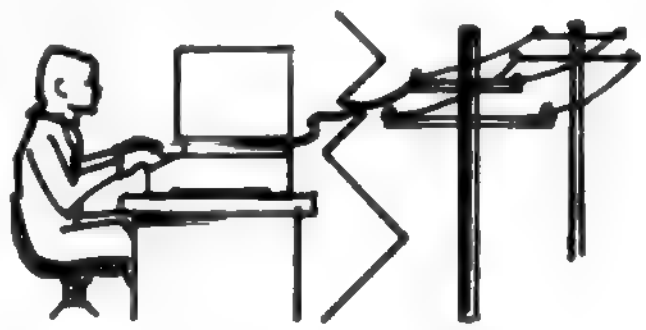
Printer Output Buffering

BUSINESS



Dot Graphic Reproduction

INDUSTRIES



Terminal Emulator

Recommended Retail

➡ $85.00 ⬅

Less than $29 per function!

Terminal Emulator Data Aquisition

- RS-232 direct connect or modem connect to remote computer
- Full communications, data logging, printing and viewing
- Software permitting intelligent graphics terminal emulation will be available later.
- Usage of 'INT' call permits specific and easy user adaption of base emulator for any specific terminal function.
- Queuing of incoming and outgoing data allows a user to run a current program and still receive data.
- Modular structure permits easy interfacing to user data bases.

This unique device meets the standard, beats the standard and will be the standard for IBM users of software, worldwide.

The NAME of this *indispensable* device?

I-C-Magic™
PLUG in
and
GO

See local dealer *or* write for technical details.

Attn: **ICM Chip**
MBI Corp.
1019 8th Street
Golden, CO 80401

IBM is a registered trademark of International Business Machines, Corp. MBI and I-C-Magic are trademarks of Microcomputer Business Industries, Corp.

MICROCOMPUTER BUSINESS INDUSTRIES CORPORATION

MBI

ADMINISTRATIVE OFFICES: 1019 8TH STREET, GOLDEN, COLORADO 80401 (U.S.A.)

If you are registering source code, make a $10 check payable to "Register of Copyrights"; staple it to Form TX; and send the form, the check, and the listing in one envelope to the Register of Copyrights, Library of Congress, Washington, DC 20559.

ONE copyright case was won because of a misspelled word.

Form TX requests that you deposit two copies of your work with the Copyright Office. Unless you are copyrighting documentation, ignore this instruction; the Library of Congress doesn't want a copy for its collection.

If you decided to keep your source code a trade secret and to register the object code, make your listing in either hexadecimal or binary code, fill out Form TX as described, and staple a letter like the one in Figure 1 along with your check to the form.

That's all there is to registering source or object code. File an additional Form TX if you want to copyright user documentation. The procedure is exactly the same as outlined above, except that you deposit two copies of the documentation. In many cases it is easier to prove the piracy of written documentation than of programs.

Games

Game programs may be registered as any other program, using Form TX. If the game uses graphics, you may want to protect the graphic images. These images are separate from the program itself and can be protected under their own copyright. Use Copyright Office Form PA, obtainable the same way you got Form TX. Fill out Form PA the same way you filled out TX.

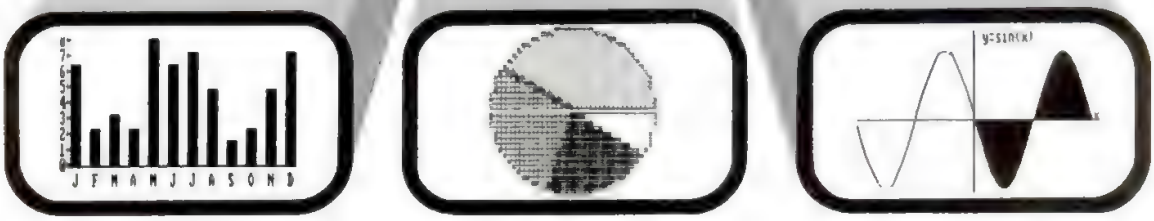
In addition to Form PA the Copyright Office requires a videotape. The videotape should show both the demonstration and playing modes of the game. It should also show your copyright notice as it appears on the screen. Film the CRT as the game plays by itself and film someone playing the game. Don't get too carried away. If the screen changes as the game progresses, include the different screens. Jot down the playing time of the tape.

Finally, write a short letter like the example in Figure 2, and attach it to your application. Send the tape, your check, Form PA, and the cover letter to the Copyright Office.

In a few months the Copyright Office will send you a copy of the registration certificate with an official seal stamped on it and a registration number. File the certificate in a safe place. */PC*

Part Three will discuss the measures copyright holders can take to discourage piracy.

Now you can speak graphically to your IBM PC with



Softtrax and Pascal Video Tools

Softtrax featuring half-tone shading, is a subroutine that prints medium or high resolution graphics on an IBM or Epson Printer*. Softtrax is written in machine language for speed and compactness, but easily used directly or called from your BASIC program. Softtrax . . . graphics with half-tone shading... and much more. Get a line on Softtrax, today.

$39.95 each, plus $1.50 handling charge.
*Graftax Plus required

Pascal Video Tools eliminate the need for being an assembler programmer. Pascal Video Tools are a set of procedures callible from standard Pascal to control the IBM color and/or monochrome displays. Material can be displayed on both monitors, simultaneously. Enter the new, easy-to-use, world of screen manipulation. Now you can program anything from a simple erase screen or cursor positioning to a complex graphics screen . . . all in standard Pascal.

Binary Research 74 Elm Street • Morristown, NJ • (201) 539-4088

Mountain Computer Presents The Hard Disk System with Dynamic File Allocation

Long before you are out of space on our system, other disk systems will have given up!



The DYNAMIC 5M Disk System™ with—

The Mountain Virtual File System (MVFS)™ software.

- Uses dynamic file allocation which automatically consumes file space only when needed not when initialized.
- Makes available up to 50% more disk space than competitive units and uses no extra memory space.
- Allows large files up to 5 MBytes for database applications in CP/M and Pascal.
- Supports DOS, CP/M & PASCAL for Apple II and MS DOS & CP/M 86 for the IBM Personal Computer.

QUALITY — The Mountain Computer reputation for quality peripherals combined with a one year warranty.

RELIABILITY — The dependable disk system from a leading supplier of personal computer peripherals, with a service organization to support it.

DYNAMIC 5M Disk System™ for the Apple II and the IBM PC (available soon for other systems)

[illegible] supply, interface card, cabinet, cabling, [illegible]

See your local computer store for this and other innovative Mountain Computer Products

Quality and Performance, at an affordable price — $2,695.

Mountain Computer
INCORPORATED

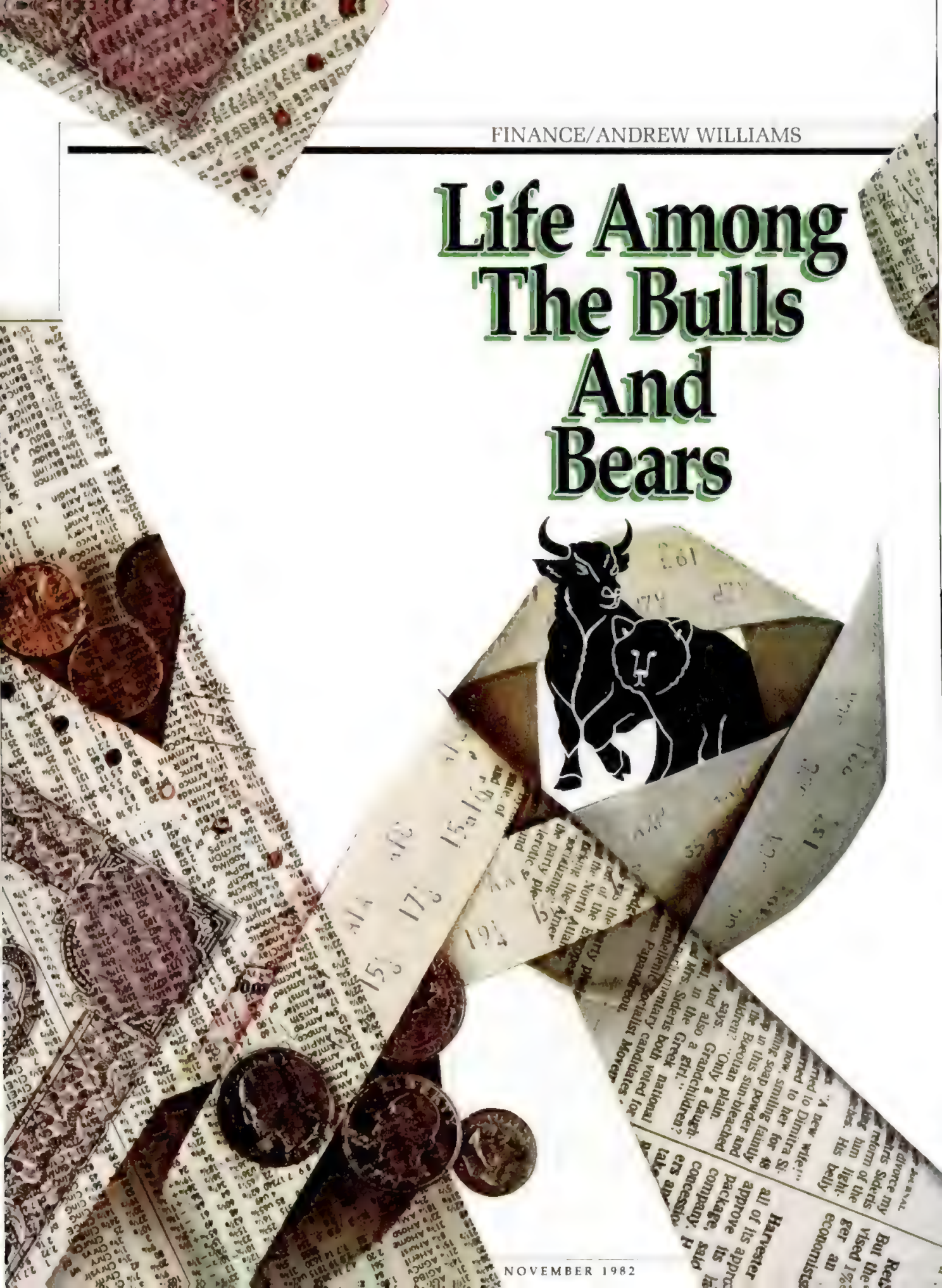
300 El Pueblo Rd. Scotts Valley, CA 95066
TWX: 910 598-4504 (408) 438-6650

Apple II is a trademark of Apple Computer, Inc. CP/M and CP/M 86 are trademarks of Digital Research Inc. MS DOS is a trademark of Microsoft. IBM PC is a trademark of IBM.

Copyrighted material

FINANCE/ANDREW WILLIAMS

Life Among The Bulls And Bears





On safari with a PC, The Personal Investor, *and the* Dow Jones Reporter. *Stock market software for the Dow Jones News/Retrieval service.*

The Personal Investor
PBL Corporation
605 Harmony Circle Dr.
Wayzata, MN 55391
List Price: $145

Dow Jones Reporter
IBM Corporation
Systems Products Division
P.O. Box 1328
Boca Raton, FL 33432
List Price: $100

Information is money. Have the correct information at the right time and you stand a better chance of profiting from financial decisions. Have the wrong information or the right information too late, and your chances of making a profitable decision are just that—chances.

The standard source for business and financial information in the United States is the *Wall Street Journal.* It is the largest newspaper in the country and one of the few with nationwide circulation. Consider how far ahead of the investment game you would be if you could read most of the stories in tomorrow's *Wall Street Journal* the evening before they hit the newsstands. Consider the impact on your investment decisions of receiving detailed financial information abstracted from corporate reports filed with the Securities and Exchange Commission. What if you could obtain consensus earnings estimates of the companies that interest you from analysts at 45 major stock brokerage firms? All this information and a great deal more is available on-line, 22 hours a day, from the Dow Jones News/Retrieval service.

The News/Retrieval (N/R) service was founded in 1974 and is owned by Dow Jones and Company, Inc., publisher of the

Wall Street Journal and *Barron's Financial Weekly*. An elder statesman among electronic data base services, N/R has some 50,000 subscribers, more than the combined total of two other popular data bases: The Source and CompuServe.

Subscribers to N/R are divided between large and small corporations and professional and private investors. A growing number of individuals are subscribing to the service for the nonfinancial data bases. Among the service's subscribers are most of the Fortune 500 companies and 90 percent of the top financial institutions in the country. All you need to join this financially well-informed group is a PC, an asynchronous communications adapter (or a serial port on a combination card), and a modem. You may also want to consider using one of the software packages reviewed in this article, although it is not necessary to purchase the software in order to subscribe to the service.

The N/R Data Bases

The News/Retrieval service is a collection of electronic data bases designed to supply accurate, timely, and concise financial information to executive and financial officers, as well as professional and private investors. Eric Bradshaw, National Sales Manager for the service, describes it as "the executive's information system." It is a system designed for those who need to know what's going on in the world of business and finance, to know it in a brief and accurate form, and to know it at the crucial moment in their decision-making process.

Table 1 lists the data bases offered by the service as of October 1, 1982. Bradshaw indicates that additional data bases are being considered and will be added if they measure up to the high standards of the service.

If you are an individual investor, you will find the Current Quotes data base particularly useful. From it you can get the latest high, low, close, and volume traded for any of approximately 6,000 securities. Throughout the trading day you can get current quotes, although you must put up with the standard, minimum 15-minute delay imposed by the stock exchanges. You can get quotes on common and preferred stocks and warrants, corporate and foreign bonds, mutual funds, U.S. Treasury issues, and options. You can also get historical quotes if you want to see how a stock has acted in the past. Monthly summaries go back to 1979; quarterly summaries go back to 1978. You can also obtain quotes for the most recent 24-day period.

YOU CAN obtain day-to-day data by changing the name of the stock list you submit each day.

The news portion of the N/R service has the widest appeal and can provide the most general information. You can read most of the stories that will be in tomorrow's *Wall Street Journal*, as well as stories from *Barron's* and items written specifically for the Dow Jones News Service.

You can create your own personal electronic newspaper. The service allows you

Table 1: Summary of news/retrieval data bases.

INTRO
- Free information on News/Retrieval available online.
- Includes new data base announcements and other information of interest to subscribers.

MASTER MENU
- A complete on-line listing of the information contained in the service, along with detailed instructions on how to access each data base.

NEWS
- From the *Wall Street Journal*, *Barron's*, and the Dow Jones News Service.
- Search through headlines and retrieve stories as recent as 90 seconds and as far back as 90 days.

FREE TEXT SEARCH
- Search the news data base using any combination of words, dates, or numbers to June, 1979
- A powerful way to find specific data on any subject

MEDIA GENERAL FINANCIAL SERVICES
- Detailed corporate financial information on 3,150 companies and 170 industries.
- Major categories include: revenue, earnings, dividends, volume, ratio, shareholdings, and price changes.

WEEKLY ECONOMIC UPDATE
- A single source for economic news.
- A review of the week's top economic events and a glimpse of the month ahead.

WALL $TREET WEEK ON LINE
- On-line transcripts from the popular PBS television program, "Wall $treet Week."

NEWS/RETRIEVAL WEATHER REPORT
- Weather tables for over 50 major cities.
- National weather summary and forecast by geographic region.

NEWS/RETRIEVAL SPORTS REPORT
- Scores, stats, standings, stories, and schedules for most major sports.
- Professional, major college, and top amateur.

CURRENT QUOTES
(Minimum 15-minute delay during market hours)
- Common and preferred stocks and warrants.
- Corporate and foreign bonds.
- Mutual funds, U.S. Treasury issues, options.

HISTORICAL QUOTES
- Daily volume, high, low, and close.
- Monthly summaries back to 1979.
- Quarterly summaries back to 1978.

MONEY MARKET SERVICES
- Weekly economic survey from 40 to 50 of the nation's top financial institutions.
- Includes median forecasts of monetary and economic indicators.

DISCLOSURE II
- 10K extracts, company profile, and other detailed data on over 6,000 publicly held companies.
- From the U.S. Securities and Exchange Commission.

CORPORATE EARNINGS ESTIMATOR
- Timely earnings forecasts for 2,400 of the most widely followed companies.
- Compiled by Zacks Investment Research, Inc. from the research of top analysts at 45 major brokerage firms.

WALL STREET JOURNAL HIGHLIGHTS ON LINE
- Provides on-line headlines and summaries of major stories as early as 6 a.m. (Eastern time).
- Includes front page news items, front and back page features, market pages, and editorial columns and commentary.

ENCYCLOPEDIA
- A comprehensive, authoritative and easy-to-use reference tool.
- More than 28,000 carefully researched and concisely written articles.
- Completely revised and updated electronically twice a year.

to retrieve stories on any one of 6,000 companies, 50 industry groups, or 80 news categories. You might want the latest news on IBM, on "Economic Indicators," or on a specific industry or geographic area of the world. Stories are available 90 seconds after they are placed on the Dow Jones Broad Tape (the news service for stockbrokers), and they remain available for 90 days. Other data bases contain selected stories that go back to 1979.

Disclosure II is a data base that will be of great interest to private investors trying to decide whether to buy stock in a particular company. This data base can provide a constantly updated "super annual report" on any one of the approximately 6,000 publicly owned companies followed by the service. This information is condensed from the many detailed reports these companies must file with the Securities and Exchange Commission.

You can also get weather reports, sports reports, and movie reviews to help you plan your leisure time, and articles from a 28,000-entry electronic encyclopedia to help your kids with their term papers. The encyclopedia, one of the recent additions to the data base, is updated twice a year.

Subscription Rates

Table 2 shows the current charges for subscribing to N/R. There is a great difference between the rates charged during prime time (6 a.m. EST to 6 p.m. local time) and nonprime time (6:01 p.m. local time to 4 a.m. EST). Nonprime time rates are also in effect on weekends and major holidays.

You can choose from three subscription categories as shown in Table 3: Standard, Blue Chip, and Executive. If you use the service for more than 150 minutes a month during prime time, the Executive Membership, with its one-third discount at all times, will make the most sense. If you have average monthly charges for nonprime-time usage of $18.75 or more, you will save money by taking the Blue Chip Option, which offers a one-third discount on nonprime-time rates. If you are a moderate user, the Standard Subscription is for you. In addition to discounts, the Blue Chip and Executive memberships provide 6 free hours of usage on new data bases each year. You will also receive a copy of *The Dow Jones News/Retrieval Fact Finder*, a guide to the system's operations and a list of symbols. None of the three types of membership has a minimum monthly charge.

You connect to the service by using a telephone number for the Tymnet or Telenet system that is closest to you. This will usually be a local call. Charges are for actual connect time rounded to the nearest minute, but you should know that prime-time and nonprime-time rates are determined by the time you connect to the system. If you connect exactly at 6 p.m. local time, you will be charged at prime time rates for your entire session. If you wait until 6:01 p.m. local time, you will be billed at nonprime-time rates.

If you have the necessary equipment and you wish to have information transmitted at the faster 1200 baud rate rather than at the standard 300 baud service, you will be charged rates that are 1.7 times the rates shown in Table 2. Finally, there are surcharges for using some of the services. These are also noted in Table 2.

Table 2: Rate Schedule for Standard Subscription

Service	Prime-Time Usage Rates (per minute)*	Nonprime-Time Usage Rates (per minute)*
Dow Jones Business and Economic News (includes News from Dow Jones, Free Text Search, and *Wall Street Journal* Highlights On Line)	$1.20	$0.20
Dow Jones Quotes (includes Current and Historical Quotes)	$0.90	$0.15
Financial and Investment Services (includes Disclosure II**, Corporate Earnings Estimator, Media General, and Money Market Services)	$1.20	$0.90
General News and Information (includes Movie Reviews, Master Menu, Sports Report, Weather Report, Wall Street Week, Encyclopedia, and World and National News)	$0.60	$0.30

*Per minute of connect time rounded to the nearest minute.

**$2 access fee for one company search in nonprime-time or $4 in prime time.

Table 3: Subscription Options

Standard Subscription: Free to purchasers of either *The Dow Jones Reporter* or *The Personal Investor*. Subscribers who do not purchase one of these software packages are charged a one-time start-up fee of $50.

Blue Chip Membership: A $75 annual subscription fee in addition to the $50 start-up fee (included with the software packages), provides the subscriber with a one-third discount on nonprime-time rates (no discount on prime-time rates). Blue Chip Members also receive at least 6 free hours a year on new data bases and a copy of the *Dow Jones News/Retrieval Fact Finder*.

Executive Membership: $50 monthly subscription charge includes a one-third discount on prime-time rates as well as all the features of Blue Chip Membership.

How To Subscribe

You can subscribe directly to the service or you can purchase either *The Personal Investor* or the *Dow Jones Reporter*. These are the only two programs currently approved for use on the IBM PC by the Dow Jones News/Retrieval service.

The software programs contain the necessary toll-free numbers and the Dow Jones Information Services-User Agreement required to subscribe. You also receive with each package 1 free hour of nonprime-time usage (worth from $12 to $54, depending on which services you use). The price of the software also includes the basic subscription fee; however, if you wish to upgrade your subscription to Blue Chip or Executive, you may do so by contacting Dow Jones.

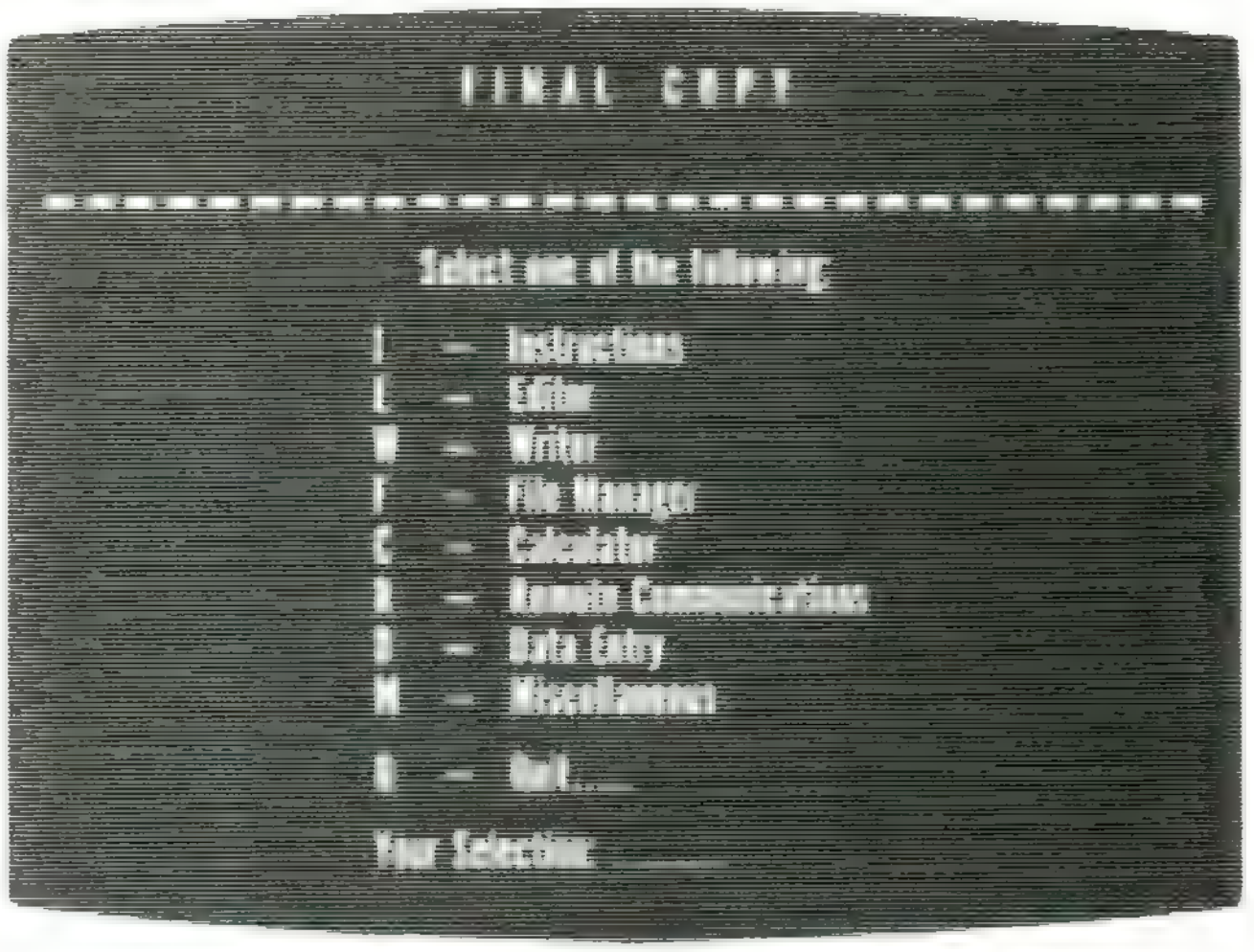
If you wish to subscribe to the News/Retrieval service without buying one of the software packages, you can contact the service at (800) 257-5114. You will have to pay a membership fee that varies with the category you choose, and you will not receive the free hour of nonprime-time usage offered with the software packages.

If you do not use one of the software packages, you can use the simple communications package supplied with PC-DOS (see the description in the IBM PC Guide to Operations), or another communica-

Our software package is better than most of theirs put together.

Instead of buying four or five different programs, learning how to operate this one and how to link up with that one, Final Copy™ does it all for you.

There's no need to buy separate text formatter, report generator, forms entry and calculator programs. Final Copy™ does it all in one easy to learn package. Word processing, data entry, data management, business calculating and remote communications make Final Copy™ the only software package you will need.



Final Copy™ is portable. It's written in UCSD Pascal, so it runs on the IBM PC, Apple III, Xerox 820, TRS 80 Model II, and all TI's.

EASY TO LEARN. Powerful as it is, you can learn Final Copy™ fast. It helps teach itself with single key stroke commands, menu prompting at every point and on-line help files.

PROVEN. Final Copy™ has been successfully used by many major corporations since 1979, on the full TI line in single and multi-user systems.

AVAILABLE NOW. For more information, write "Final Copy"™ on the back of your business card and send it to us. Ticom Systems, Inc., 13470 Washington Blvd., Marina del Rey, Ca. 90291. Or call (213) 827-7118. Distributor and dealer inquiries are invited.

FINAL COPY™

BY TICOM

You'll learn it in a few days. You'll use it for years.

UCSD Pascal is a trademark of the Regents of the University of California
APPLE III is a trademark of APPLE COMPUTER. IBM Personal Computer is a trademark of IBM
TRS 80 is a trademark of Tandy Corporation. XEROX is a trademark of XEROX Corporation

tions package such as *PC-Talk*. You won't be able to submit lists for automatic quote retrieval or use the other features of the software packages unless you are capable of writing your own programs. (Not all communications software will be able to connect with N/R; be sure to verify that a program works with this service before purchasing it.)

The Personal Investor

The Personal Investor is a software package from the PBL Corporation that provides the individual investor with a convenient way to gain access to the Dow Jones News/Retrieval service. In addition to needing PC-DOS, display, printer, and disk drive, this package requires a modem and an IBM PC with at least 128K of memory. The program automatically retrieves quotes for common and preferred stocks and then turns the information into a number of useful reports. These reports include the gains and losses on your portfolio, the dividend yield on the stocks you hold relative to both their purchase price and their current price, and a report on the year-to-date short- and long-term capital gains and losses on stock you have sold. All this is useful information, and it's handy to have it automatically calculated each time you update your portfolio through the News/Retrieval service.

The Personal Investor is a model of convenience. Every feature is accessed through a Main Menu, which is organized as a flow chart of the parts of the program (Figure 1). To utilize a feature (Add/Change Stocks or News Terminal, to cite two examples) you use the cursor control keys to move the cursor through the flow chart to the box containing the function you wish to use. When the cursor enters a box, the box flashes to indicate that you can activiate that particular feature by pressing the Enter key.

When you have entered a function, you are given the option of having a report printed or having the information displayed on the screen. Each section of the program displays messages that clearly explain your options, how to move about that particular screen, and how to get back to the Main Menu. This makes it easy to use the program without having to refer to the manual constantly.

The Add/Change Screen

The heart of *The Personal Investor* is the Add/Change screen. Each Add/Change screen is like a 3x5 file card on which you note facts about each stock, such as its stock exchange symbol, the stock's name, the number of shares purchased, the purchase price, the date, the commission, and other relevant information. You can store a small portfolio of about 20 stocks, 30 purchases, and 30 sales on the program diskette. If you have a larger portfolio and two disk drives, you can create a stock data diskette that will hold up to 300 stocks, 700 purchases, and 500 sales. That should take care of even the most active trader.

The manual for *The Personal Investor* notes that should your computer be turned off or should a power failure occur while you are viewing the Add/Change screen, the program and your data may be destroyed. You are urged to back up your diskettes—good advice for anything you wish to avoid losing.

Setup and Log-On

The Setup function allows you to enter the Tymnet phone numbers used to access the Dow Jones News/Retrieval service, your password, whether you want a form-feed signal sent to your printer after each

Dow Jones News/Retrieval and the Smartmodem

How to interface this data base and a PC using the Hayes Smartmodem.

If you want to use the D.C. Hayes Smartmodem, you must make some modifications to both *The Personal Investor* and the *Dow Jones Reporter*. *The Personal Investor* comes with an insert that explains a simple change that must be made to the Smartmodem to get it to work with the program. Using the *Dow Jones Reporter* with the Smartmodem is somewhat more involved.

The Technical Editor of *PC* magazine and I learned this after spending the better part of 2 hours trying to sign on to the Dow Jones News/Retrieval service with the *Dow Jones Reporter*—without even getting close. The problem stems from the fact that IBM wrote the *Dow Jones Reporter* assuming the user will have an acoustic modem. The program expects you to dial up the news service, but you can't do that with the Smartmodem. I checked the manual for any clues about the Smartmodem. No reference. I checked for a telephone number to call for problems. No number. Finally, in desperation, I looked in the News/Retrieval manual (not the manual accompanying the program from IBM) and found the telephone number for the News/Retrieval Customer Service Hot Line: (800) 257-5114. I called and explained the problem. They had the answer!

Here is what you do if you have the *Dow Jones Reporter* and a Hayes Smartmodem:

1. When you are in the Main Menu and wish to connect to the service, select option #2: Manual Entry Mode.
2. When you are prompted, press [F3] to select the manual log-on to the Dow Jones News/Retrieval.
3. You will be asked to insert your data diskette in Drive A. Do so.
4. Press [ENTER] and choose [1] from the menu to begin the manual log-on procedure.
5. The following must be typed in capital letters:

   `AUX [ENTER]`
   `ATT [ENTER]`

   The modem will then respond with "OK."

What you type at this point depends on whether you have Touch-Tone or rotary dial service. For rotary dial phones type in:

ATDP{LOCAL PHONE NUMBER}.

For Touch-Tone phones, type in:

ATD{LOCAL PHONE NUMBER}.

Type these commands without spaces, and press [ENTER] to execute. You should then hear the modem dial the number, and you should receive notice that you have been connected to the system. Follow the instructions and complete the log-on procedure.

Note: If you make a mistake in typing the commands (for example, you forget to type in uppercase letters), you can type A/ [ENTER] to start over. —*A.W.*

report, and whether you have an IBM or Epson printer. Once this information is entered, you can automatically log on to the service and have the information printed as you receive it.

The Personal Investor gets you on the News/Retrieval service in two different ways. If you wish to check the prices of the stocks in your portfolio, you enter the box labeled "Dow Quotes" on the Main Menu. If you wish to access the other data bases or connect with some other service such as The Source or CompuServe, you enter the box labeled "News Terminal."

Once you choose one of these two boxes, press Enter. If you have a D.C. Hayes Smartmodem, the sign-on procedure is automatic. If you have an acoustic modem or a different direct-connect modem, you must do the dialing yourself. After that the program automatically sends your password, terminal identifier, and the other information required to get you safely on the system.

If you are updating stock prices, everything is automatic. After the quotes have been retrieved, you will be signed off the service and returned to the Main Menu. If you have entered the service through the News Terminal, you will use Dow Jones News/Retrieval commands to move about the various data bases. If you have set up your printer, printing will occur automatically as you view the material.

Shortcomings

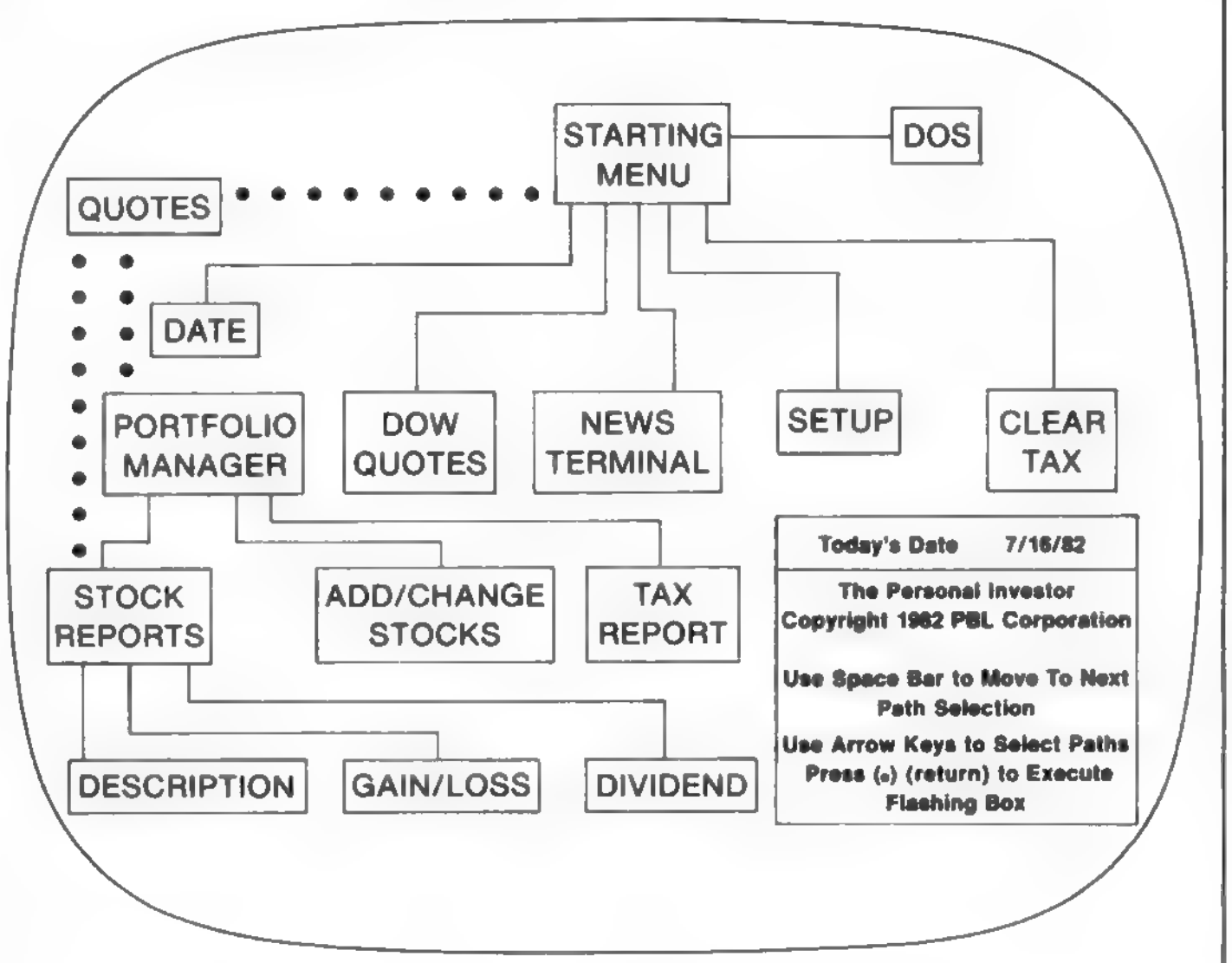
While *The Personal Investor* is very easy to use, it does have some drawbacks and limitations. Perhaps the most severe is that the automatic quote retrieval function works with only common and preferred stocks, even though the N/R data base also has information on foreign, domestic, and government bonds, options, and mutual fund shares. Most serious investors have one or more of these types of securities in their portfolios. Unfortunately, *The Personal Investor* cannot automatically retrieve quotes for these investments, nor can it incorporate them into its reports on gains and losses, taxes, and income (dividends). This is a serious shortcoming.

This problem can be overcome to some degree through the use of the News Terminal access mode. Once on the service, you can enter the data base for quotes and retrieve the needed information. But this points to the second major weakness of the program: You must wait from 7 to 10 days before Dow Jones sends you a copy of *The Dow Jones News/Retrieval Fact Finder*, the manual for the News/Retrieval service that includes all the special codes and symbols necessary to utilize the system. Without it you will have to find your way through the data bases as best you can. Unfortunately, the manual for *The Personal Investor* refers you to "the Guide" at several points without explaining what it is or from where it will come.

A final drawback of this software is that you have no way within the program to collect price and volume information for a stock over a period of time. This information is often used by investors when making the decision to buy or sell a particular stock. In *The Personal Investor*, each time the portfolio is updated the new information is written over the old information, thus destroying it. To do an analysis based on price movements you would have to save the information manually.

Despite these weaknesses, *The Personal Investor* is a very easy program to use. An investor who wishes to follow a portfolio made up solely of common and preferred stocks and who wishes to have convenient access to the News/Retrieval service will find this program a useful addition to his or her software library.

Figure 1: ***Personal Investor's*** *Main Menu.*



Dow Jones Reporter

The only other software program approved by the Dow Jones News/Retrieval service is IBM's *Dow Jones Reporter*. While this program bears some resemblance to *The Personal Investor*, it is quite different in both the way it functions and the range of features it provides. In essence, the *Dow Jones Reporter* is a program for accessing the N/R service. It is menu driven and is generally easy to use, but it does not utilize information from the service to prepare reports.

To use the program you need both the program diskette and a DOS formatted data diskette. Your system needs at least 64K of memory. Before you access News/Retrieval, you set up a number of stock lists on the data diskette. Each disk can hold up to 50 stock lists. The number of stocks in each list varies depending on the length of each symbol. You must, however, limit each stock list to a specific type of security. The *Dow Jones Reporter* allows you to access all of the quote services automatically, including the ones for bonds,

Check The Chart Before You Choose Your New 16-Bit Computer System.



Columbia Data Products' New Multi-Personal® Computer, Featuring IBM-PC® Compatibility, Excels In Professional, Business And Industrial Applications. Check it out.

Columbia Data Products' MULTI-PERSONAL® COMPUTER can use software and hardware originally intended for the IBM® Personal Computer . . . while enjoying the flexibility and expandability of all Columbia Data's computer systems.

Available operating system software includes single-user MS-DOS® or CP/M 86® or multi-user, multi-tasking MP/M 86® or OASIS-16®, with XENIX® available soon, providing users with a host of compatible software packages for personal and professional business and industrial applications. A large selection of higher level languages are also available, including BASIC, FORTRAN, COBOL, PASCAL and MACRO Assembler.

Our standard 16-Bit 8088 hardware configuration provides 128K RAM with parity, two RS-232 serial ports, Centronics parallel printer port, interrupt and DMA controllers, dual floppy disks with 640K storage, Winchester disk and keyboard interfaces, and eight IBM-PC compatible expansion slots . . . and lists for only $2995. Winchester hard disk configurations, featuring cache buffer controllers for enhanced disk access performance are also available, starting at $4995

So, when you need to grow, why gamble and hassle with independent third party hardware and operating system vendors which may or may not be compatible . . . not to mention the hidden expense and frustration of implementing peripheral drivers in the different operating systems and upgrades? Who needs the finger-pointing when things don't work out?

After you review our chart, you will agree . . . for overall 16-Bit microprocessor superiority, expandability, flexibility, compatibility and real economy, Columbia Data is your *total source.*

Our Multi-Personal Computer . . . the 16-Bit system born to grow!

Get yours now.

MAIN FEATURES	CDP-MPC	IBM-PC	OTHERS
Microprocessor	16-Bit 8088 8-Bit Z-80 (Opt)	16-Bit 8088	?
USER Memory	128K-2 Mbytes	16K-256 Kbytes	?
IBM PC Compatible Expansions Slots Beyond Professional Configuration[1]	8 Slots	0	?
Resident Floppy Disk Storage	Dual 320K (std)	Dual 160K (Opt) Dual 320K (Opt)	?
Resident Cache Buffer Hard Disk Storage	5M/10M	—	?
OPTIONAL OPERATING SYSTEMS (Supported by Company)[2]			
MS DOS (PC-DOS)	Yes	Yes	?
CP/M 86	Yes	Yes	?
MP/M 86	Yes	—	?
OASIS-16	Yes	—	?
XENIX	Soon	—	?
OPTIONAL HARDWARE EXPANSION BOARD (Supported by Company)			
RS-232 Communications	Yes	Yes	?
B/W and Color Display Controller	Yes	Yes	?
Expansion Memory	Yes	Yes	?
Z-80 CP/M-80 Board	Yes	—	?
Cache Buffer Hard Disk	Yes	—	?
Time Calendar Board	Yes	—	?
IEEE Bus Controller	Yes	—	?
8" Floppy Disk System	Yes	—	?
8" Hard Disk System	Up to 40 Mbytes	—	?
Tape Cartridge System	Yes	—	?

[1]For comparison purposes, typical professional configurations consist of 16-Bit 8088 Processor, 128K RAM with Parity, Dual 320K 5-inch Floppies, DMA and Interrupt Controller, Dual RS-232 Serial Ports, Centronics Parallel Port and Dumb Computer Terminal or Equivalent.

[2]Columbia Data Products also supports CP/M 80® with an optionally available Z-80 CP/M Expansion Board

[3]As advertised in BYTE Magazine August 1982



COLUMBIA
DATA PRODUCTS, INC.

Home Office:
8990 Route 108
Columbia, MD 21045
Telephone 301-992-3400
TWX 710-862-1891

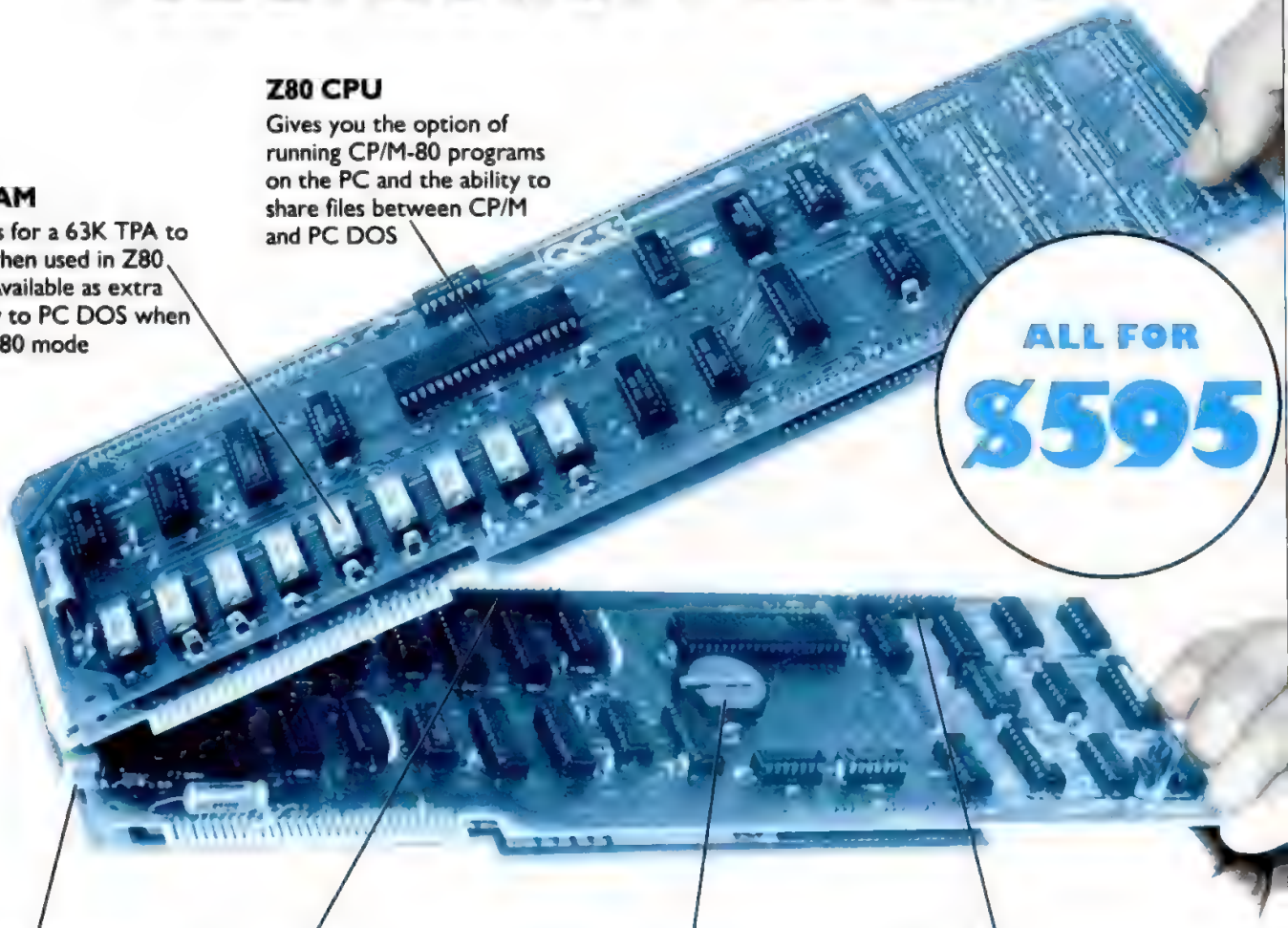
West Coast:
3901 MacArthur Blvd.
Suite 211
Newport Beach, CA 92663
Telephone 714-752-5245
Telex 277778

Europe:
P.O. Box 1118
450 Moenchengladbach 1
West Germany
Telephone 02161-33159
Telex 852452

MS-DOS and XENIX are ... of Digital Research OASIS is the trademark of Phase One ... MS-DOS and XENIX are

Big Blue

Gives the IBM PC These Additional Features



Z80 CPU
Gives you the option of running CP/M-80 programs on the PC and the ability to share files between CP/M and PC DOS

64K RAM
Provides for a 63K TPA to CP/M when used in Z80 mode. Available as extra memory to PC DOS when not in Z80 mode

ALL FOR $595

Hard Disk Interface
Allows for mass storage expansion to 80 megabytes

Parallel I/O
For print support from both CP/M and PC DOS

Realtime Clock
Provides automatic time and date on system boot up

Serial I/O
Gives direct modem support from CP/M or standard PC DOS as Comm-2

All in One Slot

QCS Quality Computer Services inc

Quality Computer Services Inc.

178 Main Street Metuchen, New Jersey 08840 ■ 201/548-2135

NOW AVAILABLE! UNIVERSAL DISK CONTROLLER

For 5¼" and 8" FLOPPY DISKS

- Single Density/Double Density
- Single Side/Double Side

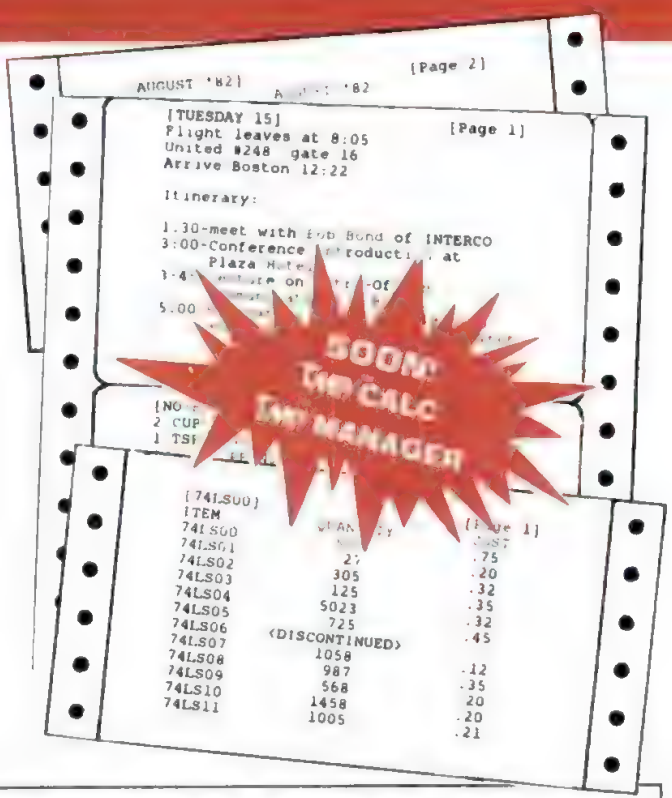
Dealer and OEM inquiries invited.

master charge VISA

Now Put The Power Of The TMP™/FreeForm On Your IBM Personal Computer

How many times have you wanted a program that would instantly let you create a database to enter, save, and retrieve information without having to spend hours figuring out how to run a structured data base management system? The TMP/FreeForm gives you an easy to use, powerful program that can be used for appointment calendars, client and prospect lists, personal and business inventories, recipes, record and tape indexes...the list goes on and on. Because the TMP/FreeForm is written in optimized machine code and uses random files, it runs fast enough to be used in "real time" applications like telephone logs, price lists, and catalogs.

- **Electronic Index Cards**
  Stored Automatically in Alphabetical Order
- **Key Words**
  Any Word, Number, or Date on Cards for Lookup and Printing
- **Built-in Screen Editor**
  Full Featured with Word Wrap
- **Wild Card Searches**
  For Card Title and/or Key Words
- **Hard Copy Options**
  Uses Standard Printer Paper or 3" by 5" Index and Rolodex Cards
- **Professional Self-Training Tools**
  Fully Illustrated Manual, Video Tape Training Available



WHAT IS THE TMP™/SYSTEM?

The TOTAL MANAGEMENT PLANNING system or TMP is a fully integrated, screen oriented, software environment. Each powerful TMP/software package can be used alone or a number of TMP/packages can be put together with the TMP/Front-End to give you one integrated software system. The TMP standard also means that once you learn how to use one TMP/software package, it's easy to learn any other TMP/program. For instance, the key you use for "Insert" in one TMP/product is the same in all TMP/products and it is used the same way. The TMP/"prompt box" allows quick and error free data entry with unique "help" screens that allow you to read "Help" without erasing the information you're working on. Like data can be transferred from one TMP/package to another. For instance, information created with the TMP/FreeForm can be directly accessed by the TMP/Manager and TMP/Manager data can be used directly by the TMP/Calc to create electronic spread sheets! Excellent manuals, video tape training programs; the list goes on and on. The TMP/software is the new generation of software you've been waiting for and is available for not only desk top computers, but also supermicros and mini computers.

Available from your local computer dealer or order direct, postpaid, from The United Software Company!

NOW!	IBM-PC (PC/DOS)	**$149.98**
NOW!	IBM-PC (CP/M-86)	**$149.98**
NOW!	UniFLEX	**$198.98**
NOW!	CANON CX-1 (See your CANON Dealer)	
NOW!	CP/M 8" Disk (Other disk formats available — call or write)	**$149.98**
NOW!	OS-9 (Contact Smoke Signal or your Smoke Signal Dealer)	**$149.98**
	DEC PDP/11 (RT-11)	**SOON**

Others **Call or Write**

TMP/FreeForm Video Tape Training Program

VHS or Beta Format	**$150.00**
U-Matic Format	**$170.00**

Dealer Inquiries Invited

The United Software Company

2431 East Douglas Wichita, Kansas 67211

$149.98

(316)684-5281

Master Card — Visa

TMP®, TMP/FreeForm, TMP/Calc, TMP/Manager, TMP/Front-End, and TMP/Writer are trademarks of the United Software Company. CX-1 is a trademark of Canon Inc. IBM PC DOS is a trade name of International Business Machines Inc. CP/M and CP/M-86 are a registered trademark of Digital Research Inc. PDP and RT-11 are trademarks of Digital Equipment Corp. OS-9 is a trademark of Microware. UniFLEX is a trademark of Technical Systems Consultants Inc.

SoftwareBanc

661 MASSACHUSETTS AVENUE, ARLINGTON, MA 02174

THE dBASE II SPECIALISTS

dBASE II™

WE WROTE THE *ONLY* BOOK

dBASE II™ USER'S GUIDE $29
FREE WITH dBASE II™!

WE OFFER THE *LATEST* ACCESSORY PRODUCTS

dUTIL	$ 69	dBASE II™ UTILITY PACKAGE
QUICKCODE	$229	dBASE II™ PROGRAM GENERATOR

NOW AVAILABLE IN BABY BLUE FORMAT FOR IBM PC DOS 1.1

WE STOCK THE *WIDEST* SELECTION OF dBASE II™

dBASE II™ WITH *FREE* dBASE II™ USERS GUIDE
CALL FOR PRICE

8" SINGLE DENSITY, TRS-80 MODEL II
5¼" APPLE, NORTHSTAR, SUPERBRAIN, TELEVIDEO, VECTOR GRAPHIC, XEROX, ZENITH Z-89
IBM PC DOS 1.1 NOW IN STOCK!

WE TEACH *ALL* THE CLASSES

SPONSORED BY SOFTWAREBANC SEMINARS, INC.

DAY 1	INTRODUCTION TO dBASE II™	9AM - 5PM	$100
DAY 2	ADVANCED dBASE II™ TECHNIQUES	9AM - 5PM	$100

BOSTON	CHICAGO	DALLAS
NOV. 6 INTRO	NOV. 20 INTRO	OCT. 16 INTRO
NOV. 7 ADVANCED	NOV. 21 ADVANCED	OCT. 17 ADVANCED

MIAMI	SAN FRANCISCO
DEC. 28 INTRO	OCT. 29 INTRO
DEC. 29 ADVANCED	OCT. 30 INTRO
	OCT. 31 ADVANCED

ORDER **1-800-451-2502**
(617) 641-1241 IN MASS.

TECHNICAL SUPPORT (617) 641-1235

Payment may be made by Mastercard Visa check, money order, wire transfers Mass residents please add 5% sales tax Add $5 00 for shipping and handling
Overseas orders add additional $10 00 Prices subject to change without notice All items subject to availability. ™ - Mfg Trademark

mutual funds, options, and common and preferred stocks. You can even enter a code that retrieves the quote from a specific exchange such as the Pacific Stock Exchange.

With this program you can obtain day-to-day data by changing the name of the stock list you submit each day. You can accumulate information for as many days as you like. The obvious way to name the list—a name followed by the date—is ruled out by the program's requirement that stock list names have only letters.

DIRECT processing would probably require more time and programming skill than the average investor possesses.

Log-On

The log-on procedure is much like that for *The Personal Investor*, provided you have an acoustic modem. (If you have a D.C. Hayes Smartmodem, see the box accompanying this article.) To log on to the service, you select the procedure that applies to your equipment—automatic or manual—and the *Dow Jones Reporter* takes over from there. It prompts you through the dialing procedure, submits your password, terminal identifier, and other required information, and completes the connection to N/R. The program provides on-screen messages to tell you what is happening at each stage. You don't have to sit looking at a blank screen wondering if something has gone wrong.

Once you have logged onto News/Retrieval, you are presented with a "Dow Jones Reporter Services Menu." This menu, generated by the *Dow Jones Reporter*, lets you access some of the data bases by entering a number. The data bases you can reach from this menu are News Requests, Current Quotes, Historical Quotes, and Disclosure II. You can also request a Display Profile or use the Manual Entry Mode. Using the Services Menu means that you don't have to type //CQ to access the quotes data base or //DJNEWS to get to the news data base. However, if you want to look at sports, the weekly economic update, or a transcript of the television program "Wall $treet Week," you must go through the Manual Entry Mode. In contrast to *The Personal Investor*'s documentation, the manual that contains all the codes for the News/Retrieval service is included with the *Dow Jones Reporter*.

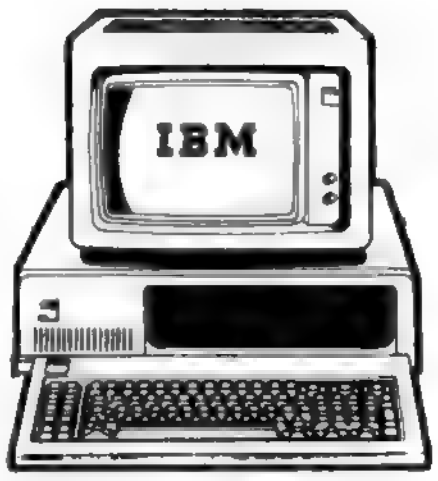
Shortcomings

The *Dow Jones Reporter* has two major shortcomings. The first is the omission of any reference to using the program with the Smartmodem. The second shortcoming has to do with the way the program uses the system disk and the data disk. For some reason, the copy of the program we were given did not make use of a two-drive system, which led to a great deal of annoying disk changing. This is particularly aggravating when one takes a "wrong turn" in the program. To recover back to the Main Menu often took several disk changes. The authors of the program considered the needs of those who have only one disk drive, but they penalized those who have two disk drives.

It is also disappointing that one doesn't have an easy way to get to the quote information for further analysis. To do the types of reports automatically prepared by *The Personal Investor*, you would have to print the information with your printer and then reenter it for processing with another program, probably a spreadsheet program. It may be possible to use the files stored on the data diskette, but there is no information about this in the manual. In any case, direct processing would probably require more time and programming skill than the average investor possesses.

The Dow Jones News/Retrieval service contains a wealth of timely and important financial information. If you are an investor, a business executive, or someone who wishes to be well informed, you will profit from a subscription to the service. The two programs described in this article make access to the system easy and convenient. *The Personal Investor* automatically generates some very useful reports. Both programs provide a membership with the News/Retrieval service and 1 free hour of nonprime-time usage. */PC*

NEW!
ATTENTION



APC BASIC
The ROLLS ROYCE of Basics

2-5 times faster performance
Accurate arithmetic
Reduces program development time up to 25%
More programming flexibility
Better memory utilization
Easier testing and debugging
Simple to Use

FEATURES:

Trace/conditional trace
Global edit
Multiple buffer files
Dynamic code merging
Dynamic array dimensioning
Bit functions
Local variables
Cross reference program
Expanded assembly language interface
Multiline user functions
Flexible output formatting
Subscription phone support

APCBASIC pays for itself quickly
ORDER NOW!
Dealer inquiries welcome

Includes APCBASIC, editor, cross reference program, library modules, configuration and compaction programs and manual

APCBASIC:
Z80 version $400
8088 version *(avail. Nov.)* $400
Manual only $48

Check VISA or MasterCard accepted

American Planning Corp.
Suite 423, 4600 Duke Street
Alexandria, Va. 22304
703-751-2574

IBM is trademark of International Business Machines Corp.

PRODUCT REPORT/FRANK J. DERFLER, JR.

The Portable PC: A Preview Of The Dynalogic Hyperion

A Canadian company enters the market with a "cousin" to the personal computer.

The Hyperion
Dynalogic Info-Tech Corporation
8 Colonnade Rd.
Ottawa, Ontario
Canada K2E 7M6
(613) 226-1383



The Hyperion's beautifully styled cabinet houses a great deal of PC-compatible computing power.

What weighs 20 pounds, fits under an airplane seat, uses PC software, and has a built-in modem? If the folks at Dynalogic are successful in their development, it will be a device known as the Hyperion. The Hyperion is a portable PC with several added features. Prototypes were demonstrated at the Comdex trade show in June, and the company expects to have production models of the device available during the first quarter of 1983.

Many companies have plans, but Hyperion has what the business community calls the necessary resources, meaning the people and the money to turn the plans very quickly into reality. Dynalogic is a Canadian company that is backed by a venture capital group called Bytec. Bytec is headed by Michael Cowpland, who is president of the Mitel Corporation. Mitel is a very successful high-technology corporation that manufactures and markets state of the art communications equipment in the United States and other countries. If Dynalogic is boosted by Mitel, it could soon become a strong contender in the computer market.

Electrically, the Hyperion will respond like a PC and use PC software and disks. Inside, however, some things are very different. The computer uses an 8088 as its CPU and has room for an optional 8087 floating point processor. It houses 256K of RAM, 20K of display RAM, and 8K of ROM. The low-profile disk drives are each dual sided and provide a total of 327,680 bytes of unformatted storage, or about 800K per side. (How would you like that on your PC?)

The Hyperion uses large-scale integration to reduce the size of the system wherever possible. It uses a new 9007 CRT controller chip, developed by Standard Microsystems in New York, and a new data separator, which allows them to condense the size of the disk control circuitry. The boards are stacked in a vertical configuration and use convection cooling instead of a fan.

The CRT for this device has a 7-inch nonglare tube with an amber phosphor. The prototypes I saw were very clear and easy to read. Many different character sets were available on an 80-column by 25-line screen. The graphics displays included 640x250 dots, 320x250 dots, or IBM PC standard 640x200 and 320x200.

The Hyperion will come with a serial port capable of asynchronous and synchronous communications and a parallel printer port. It will have a built-in modem with an auto-answer capability. The deluxe package will include a hardware clock with battery backup and a video output jack for connection to an external monitor.

Dynalogic says it will package the Hyperion with MS-DOS, Microsoft's Advanced Disk BASIC, Microsoft's *Multiplan* spreadsheet program, an "executive" text editor, and an electronic mail system.

The Hyperion has a beautifully styled cabinet that houses a great deal of PC-compatible computing power. The keyboard slides under the screen and disk drives for easy transport. Dynalogic did not copy the controversial arrangement of the IBM PC keyboard. The return key has an oversize top, and you don't have to work around the CapsLock key to get at the shift key. The soft keys are grouped horizontally on the top of the keyboard. The complete package should be available for under $5,000 including software.

Normally, a long and bumpy road comes between the development of a prototype and the actual movement of hardware off a production line. Dynalogic seems to have the backing and the know-how to make this portable PC a reality. It will be interesting to note if this is an accurate projection. */PC*

VersaText

Word Processing and Data Base in one System

Note the word System. VersaText is **MORE** than just a word processor - it is an integrated system to meet a variety of business and professional needs. Unlike some software programs that must be bought piecemeal, VersaText is **ONE** program that performs **MANY** functions. And you'll find VersaText easy to learn and easy to use. The system includes:

PCWriter - a screen editing gem

- Full cursor control
- Automatic word wrap
- Delete, insert, replace, search, and copy; done with minimal keystrokes
- On screen tutorial and helps
- Files limited only by disk space
- Uses standard DOS files

PCProcessor - a really versatile text formatter

- Automatic text justification, borders, centering, titles, [illegible]

PCBase - an easy to use data base program

- Standard data base format for names and addresses
- Define new data base formats for specific needs
- Output data in custom reports or files
- Data entry, editing, deletion
- Create mailing labels
- Full mail-merge capability
- Sort or select on any field

PCGiant - creates giant letters

- 1¼ inch letters for notices, titles, or signs

[illegible]

VersaText Word Processing and Data Base System

Why look further. VersaText was written on the IBM-PC for the IBM-PC. You'll be pleased with the power of VersaText!

VersaText requires an IBM-PC with 64K BASICA and DOS.
IBM is a trademark of International Business Machines

★ Master Charge and VISA accepted
★ Dealer inquiries invited

TexaSoft

1028 North Madison Avenue
Dallas, Texas 75208
(214) 946-7912

COMMUNICATIONS/CLIFFORD BARNEY

User-Friendly Word Processors

Can writers and word processing programs coexist? What will become of the canons of journalism under the new computer tutelage?



Illustration: Don Day

One recurrent scare theme of science fiction is that machines will make slaves of the humans who created them. Has anyone noticed that this day has arrived? The machines have been so subtle in establishing their control that they have gone largely undetected. With the emergence of the computer, however, the technoids have demonstrated their naked power.

It has always been well known that computers are fanatical with respect to forms of address: They will respond to nothing that they have not specifically agreed to recognize. This is the user interface with the general rule of computer behavior, a rule that runs directly counter to the human experience. In the Garden of Eden, you will remember, the general rule of behavior was "Whatever is not forbidden is allowed." The rule established by the computer gods is precisely the reverse: "Whatever is not allowed is forbidden." This canon is known as the Convention of Intention in G. Spencer-Brown's logical calculus, "Laws of Form." Technically, it codifies the idea that the intent of a signal—the way it can be used—is limited to the use specifically allowed to it.

In other words, a single use must be defined for every signal. Put that way, the rule sounds almost trivial, but without it you can't define a system precisely. To function at all, the computer must obey the canonical law, and since the machine must obey it, the rest of us must also. We have bowed to the rule of the gods of the machine: Whatever is not allowed is forbidden.

Machine Rule

Occasionally I feel a twinge of resentment while pumping gas, and I become violent when placed on hold; but by and large I have accepted the new order of machine rule. I began to sense the first stirrings of rebellion when, on learning my seventh word processing system, I hit a [Ctrl]Y and erased a whole line. On word processor number 6, [Ctrl]Y erased everything to the right of the cursor and [Ctrl]Z erased the whole line. The separate designers of these software packages had chosen to allow different uses to the same signal. Why not? There is nothing to say they may not, so they enjoy the paradisiacal privilege of doing what they please. What is not forbidden is allowed.

FEEDING human expression through the meatgrinder of word processing makes a puree of language itself.

Those of us who use word processors must learn a set of languages in which the symbols of one member may have the same form but the opposite function as the symbols of another. Knowing other languages is actually a hindrance—it is so many skills to be temporarily unlearned. It is hardly a difficulty, knowing French, to learn Spanish, but teaching the fingers to perform well on one word processor makes them spastic on another.

Even at their best, microcomputer word processors display a kind of macabre humor as they make their human prey dance to the tune of endless control characters. Bent over the keyboard, relentlessly stabbing dot commands, rippling off [Ctrl]QQ[Ctrl]B, applying body English when necessary, writers need the agility of a Barishnikov to compose a simple sentence. Chasing the aptly named cursor uses energy that might better be applied to making text meaningful.

The very concept of meaning, of course, is meaningless to a computer, which is solely interested in form. Word processors, in fact, were developed principally to help in the composition of form letters rather than *belles lettres*. More than half the documentation for the word processor that inspired this piece (*Word-*

FIND SUNKEN TREASURE IN THE DEPTHS OF YOUR IBM PC

AQUA RUN™



ACTION, ADVENTURE, BRILLIANT COLOR GRAPHICS AND FLAWLESS ANIMATION. A GAME DESIGNED SPECIFICALLY FOR YOUR IBM PC.

Requires IBM PC with 64K, one disk drive and color/graphics adapter. Joystick and game control adapter optional.

Get in deep with your micro dealer or send check or money order for $39.95 to SOFT SPOT Micro Systems, Inc., P.O. Box 415, North Canton, CT 06059. Telephone: (203) 379-7047. Visa, MasterCard, COD accepted. Dealer inquiries invited.

SOFT SPOT
Micro Systems

©copyrighted material

CALL "THE COMPUTER-LINE™" IN COLORADO

We wish all our customers a very happy Christmas and a prosperous New Year.

With most mail-order establishments, low prices are the bottom line. ComputerWorld International believes that it is important to be competitive by offering low prices; however, we regard service as the most important aspect of a mail-order organization. We offer toll free lines so that you, the customer, are able to talk to fully qualified computer specialists trained to answer all your questions pertaining to our line of microcomputers. We are renowned for our excellent after-sales support and our promptness for delivery. Peace of mind and excellence in service is our pledge to all our customers.

IBM Personal Computer Products

QUADRAM CORPORATION

QUADBOARD
The ultimate memory board for the IBM ® featuring
- fully expandable from 64 to 256K
- parallel port
- asynchronous (RS232) serial port
- clock calendar
- RAM disk drive

$CALL

MICROFAZER
- buffering from 8 to 64K (4 to 32 pages of text)
- printer and computer independent
- parallel/serial and serial/parallel available
- compute while you print

$CALL

INTERFAZER
Used as
- Peripheral buffer
- Multi User Printer Controller
- Computer I/O Expander
- Incompatible Device Interface
- Peripheral Multiplexer
- Data Transfer Rate Converter

$CALL

DAVONG Systems, Inc.

Description
The Davong Systems Memory Card is a convenient RAM memory expansion card for use in the IBM Personal Computer.

The Memory Card may be placed in any free system slot. It is completely compatible with all IBM Personal Computer software and hardware and runs at the same speed as IBM memory products.

64K RAM $225 192K RAM $499
256K RAM $599

Hard Disk System for the IBM® Personal Computer.

ONLY $1595.00

Description
The Davong System's Hard Disk Drive fits conveniently inside the second floppy disk location of the IBM Personal Computer chassis providing more than 30 times the capacity of a floppy diskette plus greater speed and reliability.

The DS-501 System is compatible with IBM software and supports IBM-DOS. The system includes all necessary components and software for installation.

12 MEGABYTES STORAGE **$2195.00**

TANDON DRIVE SPECIAL

Double Sided/Double Density
320K BYTES STORAGE
TM—100—2
NOW ONLY
$274
SHIPPED ANYWHERE
IN THE CONTINENTAL U.S.A.
Call for TM-100-4

RGB Color Monitor SPECIAL!

Princeton Graphic Systems

- 690 Dots Horizontal
- 16 colors
- Non-glare screen
- Sharp looking—matches IBM

ONLY **$599** with cable.

IBM SOFTWARE

BUSINESS		ENTERTAINMENT	
WORDSTAR	$289	GALACTIC ATTACK	$26
MAILMERGE	$ 79	ZORK I	$29
TAX MANAGER	$199	ZORK II	$29
256K WS/MM	$189	DEADLINE	$39
VISITREND/VISIPLOT	$239	CALL FOR NEW GAMES	
VISIDEX	$189	AT UNBEATABLE PRICES	
EASY EFFECTIVE ACCOUNTING SYSTEM	$389	T and G JOYSTICKS	$44.95
SUPERCALC	$219	ADAM AND EVE PADDLES	$29.95
SUPERWRITER	$289		

CALL FOR SOFTWARE NOT LISTED

MAYNARD ELECTRONICS
Floppy Disk Controller with parallel $229
Floppy Disk Controller with serial $259

PROFIT SYSTEMS, INC.

Model	Description	
ADD 3 -	Asynchronous Serial-RS232C) Communication Adapter (expandable to two Ports) - Real Time Clock Calendar (with software)	$1
ADD 3 - D	(Same as) ADD 3 - with built-in Second Asynchronous Port	$1
ADD 4 -	Parallel Printer Adapter - Asynchronous (Serial-RS232C) Communication Adapter (expandable to two Ports) - Real Time Clock Calendar with software	$1
ADD 4 - D	(Same as) ADD 4 - with built-in Second Asynchronous Port	$1
XE-16	**TASC MASTER** Intelligent Parallel Printer and Asynchronous Serial RS232C) Communication Adapter Buffer (expandable to two Asynchronous Ports) 16K Memory	$2
XE 64	(Same as XE 16 with 64K Memory	$3
XD-16	(Same as) XE-16 with built-in Second Asynchronous Port 16K Memory	$2
XD 64	(Same as XE 64 with built-in Second Asynchronous Port (64K Memory)	$3
CE 125	Expansion Kit Asynchronous (Serial RS232C) Port (to be used with ADD 3 - ADD 4 -, TASC MASTER XE-16 and XE-64)	$39
ADD RAM -	(Same as) ADD 3 - with memory expandable from 64K to 256K 64K version	$3
ADD RAM EL TE	(Same as) ADD 4 - with memory expandable from 64K to 256K 64K version	$4

PRINTERS

NEC

Spinwriter 2210 7730	$1339
8023A	$ 489

EPSON Graftrax Plus

MX 80	$ 429
MX 80F T	$ 529
MX 100	$ 699

OKIDATA

80 Pedestal	$ 339
80 with tractor	$ 399
82A pedestal	$ 439
82A with tractor	$ 479
83A	$ 689
84A parallel	$1 [illegible]
84A serial	$1 [illegible]
2K Buffer	$ 55
Graphics 82A 83A	$ 79

C-ITOH
F10 Word Quality Printer
- 40 CPS Printing
- Letter quality excellence

Now Only $1395

Prowriter 120cps, Parallel	$ 469
Prowriter 120cps, Parallel Serial	$ 519
Prowriter 136 column, Parallel	$ 699
Prowriter 136 column, Parallel Serial	$ 749

SMITH CORONA TPI
Daisywheel Letter Quality
NOW ONLY $589

All Epson, NEC, C-ITOH and OKIDATA dot matrix printer prices quoted are for immediate delivery, inclusive of shipping, insurance and handling charges.

INTEGRAL DATA SYSTEMS
PRISM 132 Color printer with all options
- 200 cps Sprint Mode
- 4 color printing
- Friction/Tractor feed

$1595

MONITORS

Zenith ZVM-121 Phosphor, 15 MHZ	$ 119
NEC 1201 Phosphor, 20 MHZ	$ 179
NEC 0112 Composite, Color	$ 335
NEC 2112 RGB Color	$ 899
Amdek 300 Phosphor	$ 179
Amdek Composite, Color	$ 349
Amdek IBM Compatible Color	$ 749
BMC Green	$ 89
BMC Composite, Color	$ 279
(All BMC monitors have 12 month replacement warranties)	
Princeton Graphic RGB Color	$ 599
For IBM	
Electrohome RGB	$ 749
Electrohome IBM Cable	$ 49

DISKETTES (5¼ inch)

SCOTCH WITH PLASTIC LIBRARY CASES (Boxes of 10)	
(48 Track single-sided, double density)	$26
VERBATIM DATALIFE SS DD (Boxes of 10)	$24
VERBATIM DATALIFE DS DD (Boxes of 10)	$39
ELEPHANT DISKETTES SS DD (Boxes of 10)	$23

MODEMS

Hayes Smartmodem, 300 baud	$21
Hayes Smartmodem, 1200 baud	$52
Hayes Chronograph	$18
Novation Cat	$14
Novation D-Cat	$16
Novation Auto Cat	$20
CERMETEK 1200 baud modem	$CALL

IN COLORADO (303) 279-2727 or (303) 279-2848

CALL "THE COMPUTER-LINE" ™

1-(800)-525-7877

COMPUTERWORLD INTERNATIONAL, INC.
1019 8TH STREET, GOLDEN, COLORADO, U.S.A. 80401

SHOWROOMS:
1019 8TH STREET
GOLDEN, CO 80401

1140 S. COLORADO BLVD
DENVER, CO 80222

TERMS: RETAIL MAIL ORDER ADD 1% SHIPPING (MINIMUM $2.50) - UPS GROUND. WE HONOR ALL MANUFACTURERS WARRANTIES AND EXCHANGE FAULTY GOODS IMMEDIATELY. SPECIALISTS IN APO AND INTERNATIONAL DELIVERIES. ALL PRICES REFLECT A 2.9% CASH DISCOUNT. PURCHASE ORDERS FROM ORGANIZATIONS WITH GOOD CREDIT ACCEPTED. 10% RESTOCKING FEE ON RETURNED NON-FAULTY GOODS.

Star) concerned formatting a letter for mass mailing.

Writing and Editing

What about writing and editing? For these we are offered a set of arbitrary commands that make manipulating text as graceful as shaving with an axe. We dutifully master these commands and become proficient at using them—in the manner of dancing elephants. Once learned, the dance is simple but outlandish. Then Fate delivers us another word processor, and we find that all we have learned is useless, even counterproductive.

It is time to rebel. Feeding human expression through the meat grinder of word processing makes a puree of language itself. What's really controlled by the [Ctrl] key is thought.

We need not suffer this indignity. Really good text editors exist, mostly on dedicated systems. The best have been designed for newspapers. Essentially they group control functions in a way that is useful for handling text and allow them to be executed with a single keystroke. A paragraph may be defined, for example, by putting the cursor anywhere within it and hitting a key unambiguously labeled Paragraph Define. This approach may not be perfectly adaptable to microcomputers, although user-definable function keys go a long way toward restoring control to humans. What is really needed is a text editor designed from the ground up, not derived from data processing.

Standards

Software designers might well follow the lead of the graphics industry in which, after some years of anarchy, a set of standards has been defined for software tools upon which applications programmers may build useful systems. Using the Core graphics specifications, you can write graphics programs independently of host or terminal. They will run on any FORTRAN compiler.

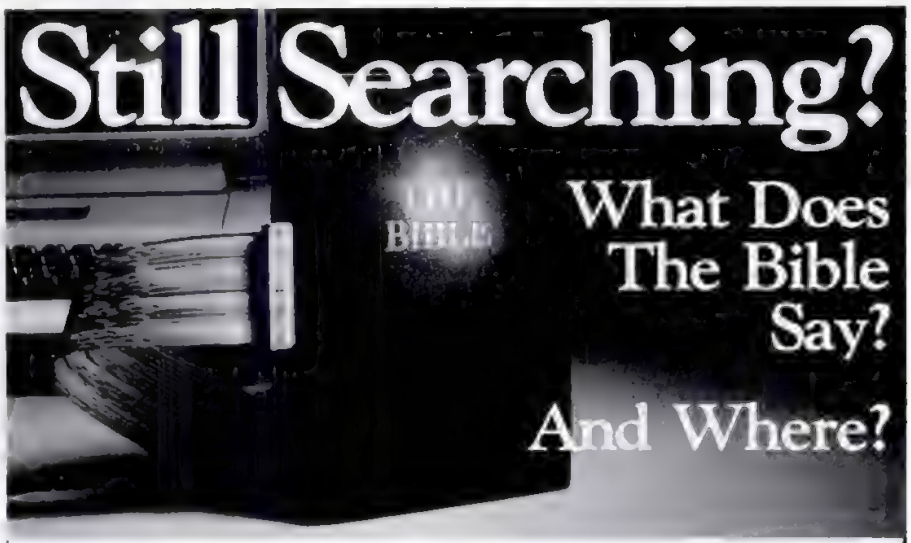
A set of analogous tools for word processing would consist of subroutines that perform basic tasks of moving text around a screen and formatting it. The applications programmer would define the actual commands used by the word processor.

This approach not only makes it possible to design a universal word processor that is still perfectly flexible and may be modified at will, but it also allows the program to take full advantage of any editing tricks that may be resident in the terminal hardware. The package may be interfaced with file-transfer software resident in the host. It could even have a useful directory, something unheard of in the microcomputer world.

WORD processors display a kind of macabre humor as they make their human prey dance to the tune of endless control characters.

Where is the Moses who will deliver these software commandments? It took the Standard Graphics Specifications Committee 3 years to agree on the Core system for graphics tools; however, this group had to work from a pure palette, defining graphics primitives on a grid of pixels. Text is already standardized to the extent of ASCII and EBCDIC codes defining keyboard characters. What remains is to group them usefully. Text consists of words and syntax, not letters and spaces. Of all the word processors I have tried or even heard of, only one takes note of this basic fact, and that one in an extremely rigid fashion.

Humans are tool users, as Stanley Kubrick reminds us. "Technical" comes from the Greek word for hand. With the proper tools we can regain control of our language. I hereby pledge full cooperation to the Daedalus who can design the tools for this war of liberation. Somewhere out there is a programmer interested in designing a word processor for text writers. Please get in touch. It's time to put the machines in their place. **/PC**



Now you can use computer technology to search the Bible on any subject. With THE WORD processor (including a disk copy of the complete KJV Bible text) you can create indexes on keywords. Or phrases. Even on concepts.

A full spectrum of text search functions allows detailed analysis for the real student of the Bible.

Print or display selected verses and/or references for personal study or Bible classes. Build your own computerized library of research material.

THE WORD processor $159.95*

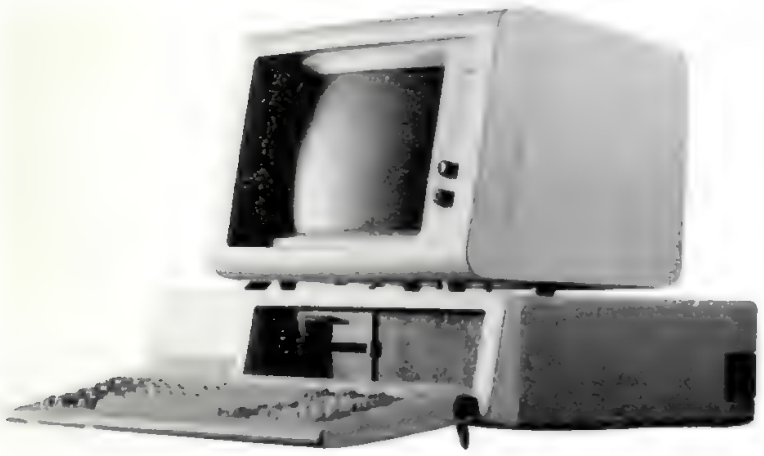
Bible Research Systems • 8804 Wildridge Drive • Austin, Texas 78759 • (512) 346-2181

Requires 48K, 1 disk drive, APPLE, TRS-80, or IBM-PC** *Plus $2.50 postage/handling

**Trademarks of APPLE Computer, Inc., Tandy Corp., and IBM Corp., respectively.

ARE YOU READY for more indepth, technical information about the IBM Personal Computer?

The editors of *PC* announce the definitive technical journal for the IBM PC and IBM PC compatible machines.



PC Technical Journal

Programmers, engineers, hobbyists, and people interested in the PC market: Are you hungry for more indepth information? Now you can supplement your monthly issue of *PC* with our new, meaty technical journal.

Starting Quarterly
Charter Issue: March 1983

CHARTER SUBSCRIPTION SPECIAL: Subscribe to ***PC Technical Journal*** before January 15, 1983 for only $12 and save 40% off the $5 cover price.

Yes, I am hungry for more PC technical information! Please sign me up as a charter subscriber to the *PC Technical Journal* at the special rate (offer expires January 15, 1983).

Name _____

Address _____

City/State/Zip _____

4 issues $12 **Canada $16** **Foreign $22**

☐ Payment Enclosed ☐ Visa ☐ MasterCard ☐ Bill me

Charge card # _____

Interbank # _____ Expires _____

Signature _____

Toll-free order phones: In California **(800) 792-0990, X1136**
All other states **(800) 227-3800, X1136**

Tips on interfacing with the PC bus — A look at operating systems— Construction projects such as building your own circuit boards and miscellaneous PC-related peripherals — User library of public domain software — Interviews with system designers and programmers — Evaluations of software publishers, their terms, what kinds of software they look for, and their track records — *PC* style guide to user-friendly software — Standards related to telecommunications, disks, and other areas — How independent software authors and startup companies get their products into ComputerLand PC dealers — Survey of best-selling hardware and software products — Guest columns on copy protection and reader reaction — Profiles of companies advancing PC technology — Programmer's guide to the PC ROM — Writing advanced graphics routines — Tips from the PC technical tutor — Using coprocessors such as the 8087 and 8089; can you piggyback them? — Converting 8-bit to 16-bit — Writing documentation — Reports gleaned from IBM technical newsletters — PC robotics and industrial applications — PC imaging — Building super PCs with lots of bells and whistles — Service tips related to repair and preventive maintenance — The exclusive *PC Technical Notebook* complete with sketches, diagrams and how-to charts — Plus much more.

EDITED BY SUSAN HURLEY

Club News

Clubs, bulletin boards, and newsletters enable PC users to capitalize on their fellow users' knowledge.

Arizona

Three subgroups were recently formed by the Phoenix IBM PC Users Group to handle the different needs and demands of group members. The subgroups meet once a month, while the main group meets bimonthly. Two of the subgroups focus on business applications, programming, and high-level languages. The third focuses on member-reviewed hardware and software products. Annual dues are $12. Contact Jim Serbin, c/o Coopers & Lybrand, 2500 Valley Center, Phoenix, AZ 85073, or Fred Linch, c/o Systems Approach, 4700 N. Central Ave. #102, Phoenix, AZ 85012.

California

The newly created Thousand Oaks Personal Computer Club (TOPCC) recently held its fourth meeting. Club members hold meetings on the last Thursday of the month at ComputerLand, 171 E. Thousand Oaks Blvd., Thousand Oaks, CA 91360. Annual dues are $10 and plans are underway to hold elections for officers and establish a newsletter and software exchange with other groups. Newsletters from other clubs or questions about joining can be forwarded to the club in care of ComputerLand at the above address.

The IBM PC Owners Club of San Francisco would like to meet with other groups to share demonstrations of programs and other equipment. The club plans to focus future meetings on the PC's performance and BASIC applications. Contact Max Brioski at 1880 California St. #12, San Francisco, CA 94109 (415) 775-8882.

Georgia

The Atlanta IBM PC Special Interest Group will sponsor classes in assembly language and BASIC. Software and newsletter exchanges are of interest to the group's 60 members. Anyone interested in joining or conducting a demonstration should contact Randy Bullard at 2965 Atterberry Ct., Decatur, GA 30033, (404) 634-9585.

Indiana

The Northern Indiana IBM PC Users Group is looking for speakers. The club aims to help inexperienced users learn about programs and PC functions. The group has 25 members. Meetings are held at the ComputerLand Learning Center, 719 W. McKinley Ave., Mishawaka, IN 46615. For further information contact Dr. Terry Alley, 316 N. Ironwood Dr., South Bend, IN 46615, (219) 289-5506.

New Jersey

The New Jersey Computer Club will hold meetings at Montclair State College in Montclair, New Jersey. The club was incorrectly identified in the Support section of the PC Product Guide (PC, September 1982) as the New York Computer Club. According to member Irving Lang, the club will invite speakers from the computer industry to speak at future meetings. For information contact Irving Lang at 7 West St., New York, NY 10036 (212) 869-5066.

New York

A meeting to discuss computer games for Christmas shoppers will be held by the New York IBM Personal Computer Users Group on December 15. The group is sponsored by the New York Amateur Computer Club and the New York City Chapter of the Association for Computing Machinery. Meetings are held on the third Wednesday of the month and annual dues are $15. Attendance reached 150 at the last meeting according to member Joe Rigo. For information contact NYPC c/o SYSDOC Inc., 1385 York Ave., New York, NY 10021.

FOR TRS-80 MODEL I OR III
IBM PERSONAL COMPUTER

- **MORE SPEED**
  10-20 times faster than interpreted BASIC
- **MORE ROOM**
  Very compact compiled code plus VIRTUAL MEMORY makes your RAM act larger. Variable number of block buffers. 31-char -unique wordnames use only 4 bytes in header!
- **MORE INSTRUCTIONS**
  Add YOUR commands to its 79-STANDARD-plus instruction set!
  Far more complete than most Forths: single & double precision, arrays, string-handling, clock, graphics (IBM low res. gives B/W and 16 color or 200 tint color display).
- **MORE EASE**
  Excellent full-screen Editor, structured & modular programming
  Word search utility
  THE NOTEPAD letter writer
  Optimized for your TRS-80 or IBM with keyboard repeats, upper/lower case display driver, full ASCII
- **MORE POWER**
  Forth operating system
  Concurrent Interpreter AND Compiler
  VIRTUAL I/O for video and printer, disk and tape
  (10-Megabyte hard disk available)
  Full 8080 or 8086 Assembler aboard
  (Z80 Assembler also available for TRS-80)
  Intermix 35- to 80-track disk drives
  IBM can read, write and run M.3 disks
  M.3 can read, write and run M.1 disks

mms FORTH

THE PROFESSIONAL FORTH SYSTEM FOR TRS-80 & IBM PC

(Thousands of systems in use)

MMSFORTH Disk System (requires 1 disk drive, 32K RAM)
V2.0 for Radio Shack TRS-80 Model I or III — $129.95*
V2.1 for IBM Personal Computer (80-col. screen) — $249.95*

AND MMS GIVES IT PROFESSIONAL SUPPORT

Source code provided
MMSFORTH Newsletter
Many demo programs aboard
MMSFORTH User Groups
Inexpensive upgrades to latest version
Programming staff can provide advice, modifications and custom programs, to fit YOUR needs

MMSFORTH UTILITIES DISKETTE includes FLOATING POINT MATH (BASIC ROM routines plus Complex numbers, Rectangular-Polar coordinate conversions, Degrees mode, more), a powerful CROSS-REFERENCER to list Forth words by block and line, plus (TRS-80) a full Forth-style Z80 assembler (requires MMSFORTH V2.0, 1 drive & 32K RAM) ... $39.95*

FORTHCOM communications package provides RS-232 driver, dumb terminal mode, transfer of files or FORTH blocks, and host mode to operate a remote FORTHCOM system (requires MMSFORTH V2.0, 1 drive & 32K RAM) $39.95*

THE DATAHANDLER: a very fast database management system operable by non-programmers (requires MMSFORTH V2.0, 1 drive & 32K RAM) $59.95*

FORTHWRITE: fast, powerful word processor w/easy key strokes, Help screens, manual & demo files. Full proportional w/tabs, outdenting. Include other blocks, documents, keyboard inputs, & DATAHANDLER fields—ideal for form letters (requires MMSFORTH V2.0, 2 drives & 48K RAM) $175.00*

MMSFORTH GAMES DISKETTE: real-time graphics & board games w/source code. Includes BREAKFORTH, CRASH FORTH, CRYPTOQUOTE, FREEWAY (TRS-80), OTHELLO & TICTACFORTH (requires MMSFORTH V2.0, 1 drive & 32K RAM) $39.95*

Other MMSFORTH products under development

FORTH BOOKS AVAILABLE

MMSFORTH USERS MANUAL - w/o Appendices — $17.50*
STARTING FORTH - best! ..... — $15.95*
THREADED INTERPRETIVE LANGUAGES - advanced analysis of FORTH internals — $18.95*
PROGRAM DESIGN & CONSTRUCTION - intro to structured programming, good for Forth — $16.00*
FORTH 79 STANDARD MANUAL - official reference to 79 STANDARD word set, etc ..... — $13.95*
FORTH SPECIAL ISSUE, BYTE Magazine (Aug. 1980) - A collector's item for Forth users and beginners — $4.00*

* - ORDERING INFORMATION: Software prices include manuals and require signing of a single computer license for one-person support. Describe your hardware. Add $2.00 S/H plus $3.00 per MMSFORTH and $1.00 per additional book. Mass. orders add 5% tax. Foreign orders add 20%. UPS COD. VISA and M/C accepted; no unpaid purchase orders or refunds.

Send SASE for free MMSFORTH information
Good dealers sought

Get MMSFORTH products from your computer dealer or

MILLER MICROCOMPUTER SERVICES
61 Lake Shore Road, Natick, MA 01760
(617) 653-6136

8087 SUPPORT for the IBM PC

Speed up your PC with these fine products:

8087 CHIP **$223**

87/88 GUIDE™
This user's guide contains all the information required to drive an 8087 from assembly language or the BASIC Interpreter. It is a valuable companion to the IBM MACRO Assembler and includes listings of 8087/8088 programs which run on the IBM PC.
$18.95

87 MACRO™
A library of assembly language MACROS which access all 8087 instructions from the IBM MACRO Assembler. Includes commented source listings of frequently called 8087 utility procedures. **$150**

87 BASIC, 87 PASCAL™ AND 87 FORTRAN™
A library of drivers which work with the IBM BASIC Compiler and produce super fast execution modules. **each $150**

FASTPAK + 8087™
This package includes a copy of our 87/88 GUIDE™, a MicroWare-tested 8087 with installation instructions and one of the following powerful modules: 87BASIC™, 87PASCAL™, 87MACRO™, 87FORTRAN™, or 87COBOL™. **$375**

APPLICATIONS

FFTs	$75
MATRIXPAK	$75
18 DIGIT TRIGONOMETRICS	$75

IBM and IBM Personal Computer are registered trademarks of IBM Corp. 8087 is a trademark of Intel Corp. 87/88 GUIDE, 87 MACRO, 87 BASIC, 87 PASCAL, 87 FORTRAN, 87 COBOL and MicroWare are trademarks of MicroWare, Inc.

VISA

MicroWare P.O. Box 79 Kingston, MA 02364 (617) 746-7341

Club News

Texas

The BASIC Society is a national group organized to provide PC and other small IBM systems users with information on software and equipment. Membership is open to any individual, organization, company, or school wishing to share information with other users. A monthly newsletter, *BASIC Society News*, includes editorials, user-contributed articles, technical systems data, software suggestions, professional resources, new product discussions, advertisements, and job announcements. Annual membership fees are $25 and include a subscription to the newsletter. For information, contact the BASIC Society, Inc., Drawer 345099, Dallas, TX 75234, (214) 484-9900.

Wisconsin

The Zork User Group is different from most other user groups. It does not hold regular meetings or publish a newsletter. Instead, the group provides hints and maps to players of the popular fantasy strategy games, *Zork I* and *II*. The group is run by "Mike," who declines to be further identified because of fears that *Zork* users will start showing up on his doorstep. The group started a year ago when Mike began testing *Zork* games for Infocom and answering questions from users.

Because the demand for information on the games was so great, Mike decided to write the hint books, which answer many of the questions asked by users. Answers are written in invisible ink. A special ink marking pen comes with the book to dissolve the ink. The books are divided into sections that correspond to different levels in the games. According to Mike, a hint book is also being developed for Infocom's *Deadline* game. Coffee mugs, bumper stickers, and T-shirts are also planned. For information, contact P.O. Box 20923, Milwaukee, WI 53220-0923.

International

A PC user group is being formed in the Toronto area. For further information contact A.R. Nolf at 620 Crescent, Burlington, Ontario, Canada L7L 5B2.

The Personal Computer Association, an organization dedicated to furthering the interests of PC users on an international level, has been formed in Canada with branches in Germany and Sri Lanka. The association's objectives are to represent the members' interests and aspirations on topics concerning the PC and provide information gathered on a worldwide level. Other clubs are invited to use the organization as a vehicle to exchange information. Discounts and other benefits are passed on to members through PCA's newsletter.

Plans are underway for a 1983 PC Convention to be held in Canada and Germany. Annual club membership is $30 in Canada and $35 elsewhere. For more information contact PCA, P.O. Box 251, Ajax, Ontario, Canada L1S 3C3. Telex: 06-986766.

The newsletter of the International Personal Computer Owners Group, Inc. (IPCO) includes product evaluations, new product announcements, programs, programming hints, and articles submitted by members. A software exchange for member-developed software is provided along with discounts on PC products. Contact IPCO, Inc., P.O. Box 10426, Pittsburgh, PA, CompuServe: 71545, 467.

Calendar

Watch for a calendar of events in coming issues of *PC*. The *Calendar* will include information on seminars, speakers, trade shows, and other special events of interest to PCers. If you have an item you think would be of interest to our readers, send a letter to *Calendar, PC*, 1528 Irving St., San Francisco, CA 94122. In order to meet our deadlines, all material must be received at least 3 months prior to publication.

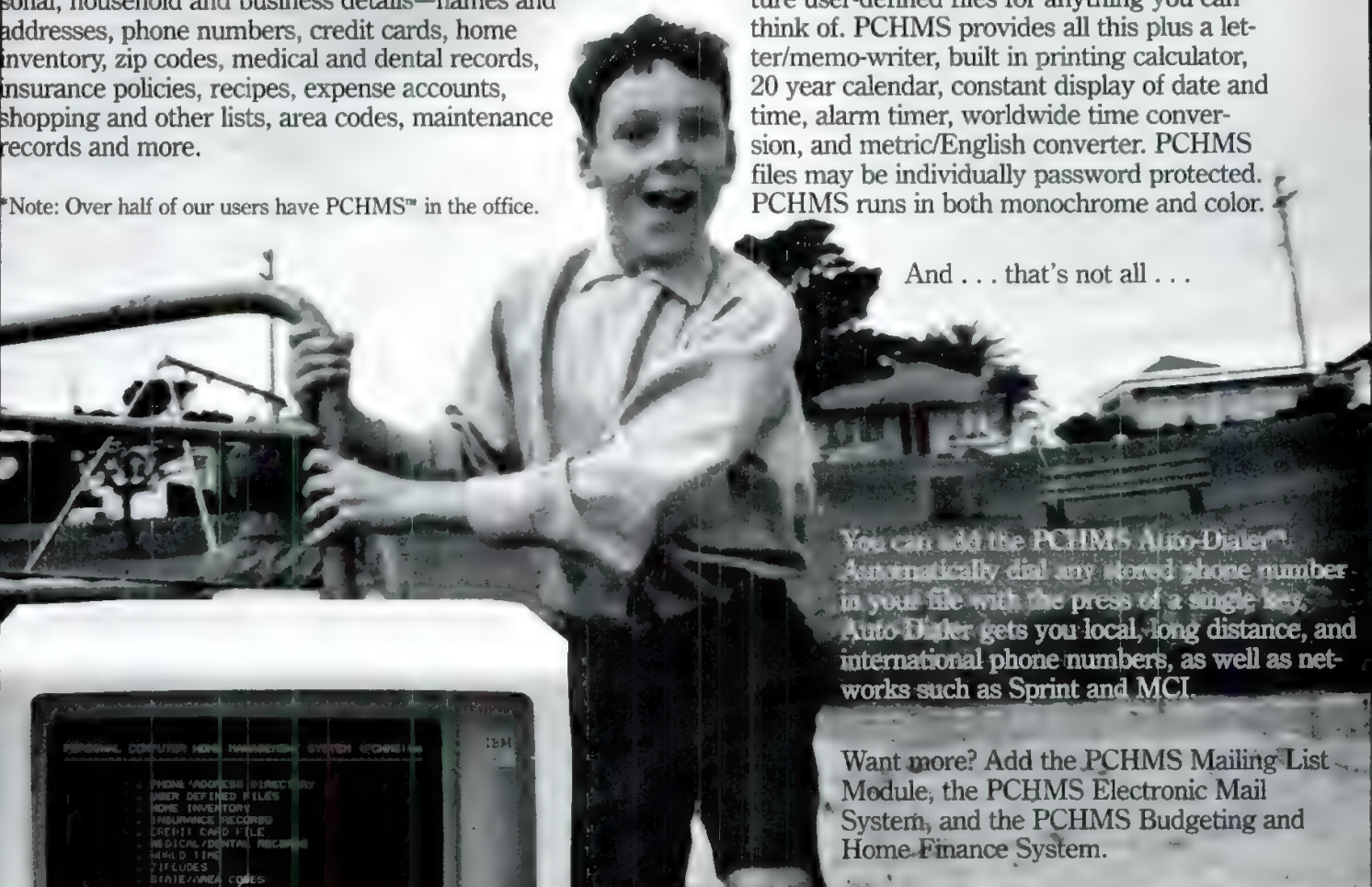
PC magazine will publish a periodic listing of PC user groups and their activities. Drop a line to Club News, PC, *1528 Irving St., San Francisco, CA 94122.*

Integrated, Menu-Driven File And Information System for Home or Office* ...with PCHMS™, our Personal Computer Home/Office Management System.

Instantly put your IBM PC to work! PCHMS is a filing and information system that manages all those details that make your office, home and personal life smooth and efficient. Organize personal, household and business details—names and addresses, phone numbers, credit cards, home inventory, zip codes, medical and dental records, insurance policies, recipes, expense accounts, shopping and other lists, area codes, maintenance records and more.

*Note: Over half of our users have PCHMS™ in the office.

PCHMS is an integrated menu-driven system that allows you to add, delete, modify, or print out records in any file by full or partial key search. And you can create 10 full-feature user-defined files for anything you can think of. PCHMS provides all this plus a letter/memo-writer, built in printing calculator, 20 year calendar, constant display of date and time, alarm timer, worldwide time conversion, and metric/English converter. PCHMS files may be individually password protected. PCHMS runs in both monochrome and color.



And . . . that's not all . . .

You can add the PCHMS Auto-Dialer™ to automatically dial any stored phone number in your file with the press of a single key. Auto-Dialer gets you local, long distance, and international phone numbers, as well as networks such as Sprint and MCI.

Want more? Add the PCHMS Mailing List Module, the PCHMS Electronic Mail System, and the PCHMS Budgeting and Home Finance System.

CHMS™ runs on an IBM Personal Computer with 64K of emory, at least one disk drive (single or double sided). rinter optional. PCHMS Auto-Dialer requires a Hayes Stack martmodem and RS232 card.

sk for PCHMS™ and PCHMS Auto-Dialer™ at your IBM PC ealer or order directly from Arlington Software + Systems. OW AVAILABLE AT COMPUTERLAND STORES.

CHMS and PCHMS Auto-Dialer are trademarks of rlington Software + Systems. The Hayes Stack Smartmoem is a trademark of Hayes Microcomputer Products, Inc. BM is a trademark of International Business Machines

ealer inquires invited.

PCHMS software is supplied on single sided diskettes together with comprehensive user documentation, backup utility and configuration program. Satisfaction Guaranteed!

☐ please send me ____ PCHMS @ $89.95 ____

☐ please send me ____ PCHMS Auto-Dial @ $69.95 ____

☐ please send me ____ PCHMS Mailing List @ $59.95 ____

Shipping and handling $ 3.50 ____

MasterCard and Visa welcome, please add 4% ____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: (____) _____ Card Exp. Date: _____

Charge Card # _____

Signature: _____

97 Bartlett Ave Arlington, MA 02174
(617) 641-0290

ARLINGTON Software+Systems

Slip us in... Toll free.

Prosthesis

Just try and enter this adult adventure game! Based in a clinical setting in Atlantic City, you'll soon realize what a sure prescription we have for stimulating, X-RAYted fun. If you play your cards (as well as the slot machines) right, your only regret will be that you can't really be there yourself. You'll be having such exotic/erotic fun, you may never want to quit - if you can keep it up. Just remember to be careful and you'll have a ball...Great fun at parties! Rushed to you in a plain brown wrapper, you must state in writing that you are over 21 years of age.

64K, One Drive, PC-DOS $29.95

Contraband

You're a smuggler traveling across the country by private plane, dealing in illegal drugs and contraband. From L.A. to Mexico City, San Francisco to New York, you scramble for the best deals. But watch out for the border patrols and the Feds, because they'll just as soon blow you out of the sky as confiscate your goods! Remember that the mob had better get their cut, or you will! Gripping, adventure packed game, you'll play for hours just to make that one big score!

64K, One Drive, PC-DOS $29.95

U.S. Motors

Will you be able to raise the selling price of your failing automobile empire's stocks? While keeping your company out of bankruptcy? Japanese imports and OPEC seemingly conspire against you while terms of government subsidies must be considered. Decisions related to these variables mean the difference between sucess and failure. A realistic and timely simulation of a corporate financial environment.

64K, One Drive, PC-DOS $29.95

Atlantic City

Enjoy all the thrills of gambling at Atlantic City without any of the expensive risks. Walk right up to the Slot Machines, play some Keno, then move up to the Wheel of Fortune, or the Roulette, Craps, and Blackjack Tables. All gambling is menu driven and makes full use of realistic casino sounds. Version 1 utilizes high-res graphics (for IBM's with color/graphics board only), while Version 2 is for monochrome displays.

Version 1 - Reqires color board
Version 2 - Works with any IBM-PC

64K, One Drive, PC-DOS $29.95

IBM and PC-DOS are trademarks of the IBM Corporation.

Games Pac I

A fantastic anthology of 10 menu-driven games, including:

A-MAZE-ING... Guide yourself through a random maze a rat couldn't solve!
CARD COUPLETS Another version of that familiar old card guessing game
DUNE An adventure inspired by Frank Herbert's best selling Science Fiction novels
WWII BOMBER You're at the controls of a B-52 bomber. Can you deliver your deadly payload?
HOWITZER A Real Time, Hi-Res graphics enhanced bunker-to-bunker artillery challenge. Blow your best friend into sludge!
DICE Turn your $5000.00 computer into a pair of dice
NUMBER GUESS Outsmart your dumb computer
SCRAMATRIX Scrambles your brains as well as words...
TIC-TAC-TOE It's you against the computer.
HAMMARABI ...Rule your ancient kingdom wisely, but watch out for those revolting peasants!

64K, One Drive, PC-DOS $29.95

Card Concentration

That familiar old card guessing game with high resolution-type graphics without using a color/graphics monitor board! A fantastic memory-improving game that may eventually lead you to smash your monitor and play $2,000 pick-up with glass slivers.

64K, One Drive, PC-DOS $29.95

Micro Minder

Ever forget a loved one's birthday? Or maybe missed a crucial meeting because you misplaced your appointment book? Never again because Micro Minder will be your personal/calendar and weekly organizer. Its auto report feature will help you to keep on time and on schedule.

64K, One Drive, PC-DOS $29.95

Video Etch

Imagine a graphics editor which allows you to easily create and save on diskette hi-resolution color graphics fine "etchings." Also imagine that these etchings can be output to your printer (only the Epson MX-80/IBM Printer with Graftrax option) for framing or hard copy storage. You've just imagined Video Etch, an incredibly versatile program in which lines, circles, boxes, color, painting, fill, hue control, line step length, insert text, save and load previously drawn work are some of the options available through quick, efficient and friendly single keystroke commands. Video Etch has applications in engineering, drafting, education, graphic design as well as creative entertainment! Choose the version that best suits you...

Video Etch - The same remarkably full featured version as described. $49.95

Video Etch NP - Has all the features of Video Etch except your etchings cannot be output to the printer. Perfect for users without a compatible printer. $39.95

Mini-Etch - Lacks the circle and box drawing features of Video Etch NP, also the text insertion, painting and filling features, but has a larger drawing area. They say that sometimes the simplest are the most fun. ! $29.95

64K One Drive, PC-DOS, Requires Color/Graphics Board

Business Programs Pac I

With a wide assortment of programs designed to handle many day-to-day business problems, this pac consists of 15 menu-driven programs including Term of a loan, Rule of 78's, Asset and Depreciation Growth Rate and Projection, Cashflow Analysis, Decision Maker, Return on an Investment, Stock Analysis, Loan Status, Lease/Buy, Apportionment by Ratio, Program Evaluation and Review Technique (PERT)

64K, One Drive, PC-DOS $29.95

Doughflo

An extremely versatile multi-purpose financial planning and cash flow analysis system of several interacting menu-driven programs. The result is a collection of reports generated with a minimum of mental strain and input keystrokes that greatly simplify tax preparation, budget planning, income and expense analysis.

64K, One Drive, Pc-DOS $79.95

Mailing List

With quick and easy data entry, our mailing list manager will sort and store over 1000 names and addresses on a single-sided diskette. Machine sorts by Zip Code or alphabet are lightning quick. Prints single or double width labels on the Epson MX-80 or IBM printers.

64K One Drive PC-DOS $29.95

Auto Dialer

A Personal or Business telephone list that interfaces with your Hayes Smartmodem to auto-dial your phone. Storing up to 1000 names and numbers on diskette for instant reca... you'll never have to search through your personal phone book again!

Requires Hays Smartmodem
64K,One Drive,PC-DOS $29.95

Personal Programs Pac I

Consisting of 10 menu-driven personal utility programs, it includes: Names and addresses with an alphabetical sort, a checkbook balancer, loan payment record, message board, English/Metric conversions, perpetual calendar, a graphic biorhythm plotter, longevity prediction test, shopping list, and a days between dates utility.

64K One Drive, PC-DOS $29.95

Word Whiz

If you've ever wanted an educational program to be fun, your desire is now fulfilled. A program designed to increase your first through sixth grader's spelling proficiency while keeping him or her interested. Word Whiz is adaptable to your child's skill level, offering a real challenge and reinforcing new concepts. Lessons for each grade are divided into three learning categories, grade 1&2, 3&4, 5 and up.

64K, One Drive, PC-DOS $29.95

States 'n Capes

A graphic learning program designed to assist children (or adults) to quickly learn America's states and capitols. High resolution graphics, sound, and excellent detail enhance the learning experience. Utilizing an interactive programmed learning format, quizzes by State Capitol, or States & Capitols are offered. Provides scores and elapsed time, while prompting with correct answers. Lots of fun for all ages!

64K One Drive, PC-DOS
Color/Graphics Board $29.95

Educational Programs Pac I

Including numerous word games and math practices, a homework planner, spelling quiz, and more. All menu driven.

64K, One Drive, PC-DOS $29.95

Diskettes

Certified, double density, single sided diskettes with reinforced centerhole. Unlimited quantity.

With purchase of any program, box of 10: $28.00

Without purchase of program, per box of 10 $33.00

Post Office Box 339
Forestville, Ca 95436

alphanetics

24-hour information (707) 887-7237 (707) 538-808

We unconditionally guarantee our software or your money back (less $3.00 shipping) if returned within 10 days of receipt. We accept MasterCard and Visa mail or phone orders if left with expiration dat... Add $4.00 for COD orders. Free Fir... Class or UPS shipping in th... continental United States. Californi... residents must add 6% sales tax.

CALL US COLLECT (707) 887-7237

Linking Word Processing And Communications

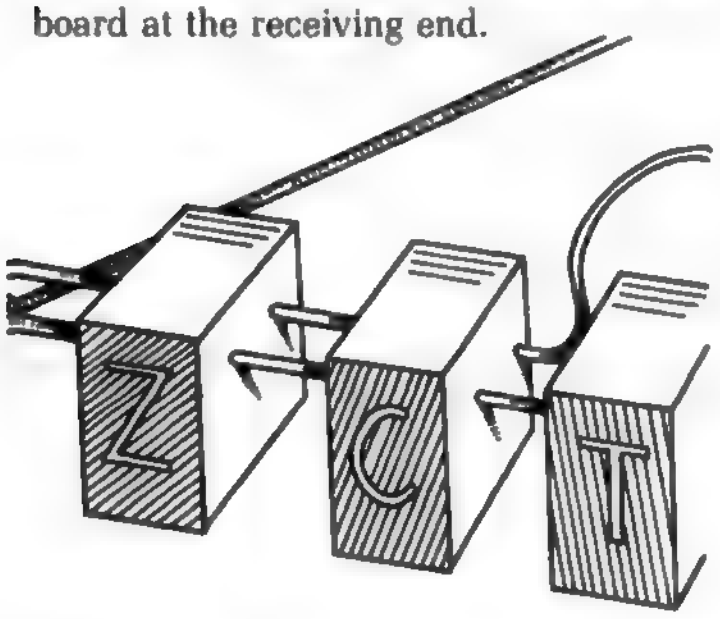
Electronic transfer of text and data files can save you time and money while extending the usefulness of your word processing system.

Crosstalk
Microstuf, Inc.
1845 The Exchange
Atlanta, GA 30339
List Price: $195

ASCOM
Dynamic Microprocessor Assoc.
545 Fifth Ave.
New York, NY 10017
List Price: $175

Move-It
Woolf Software Systems
23842 Archwood St.
Canoga Park, CA 91307
List Price: $150

The product of a word processor is a file of words. These words don't always have to be printed on paper. Electronic transfer of word files can be faster and cheaper than printing on paper and entrusting your product to a delivery service. This is particularly true when the words have to be reentered through a keyboard at the receiving end.

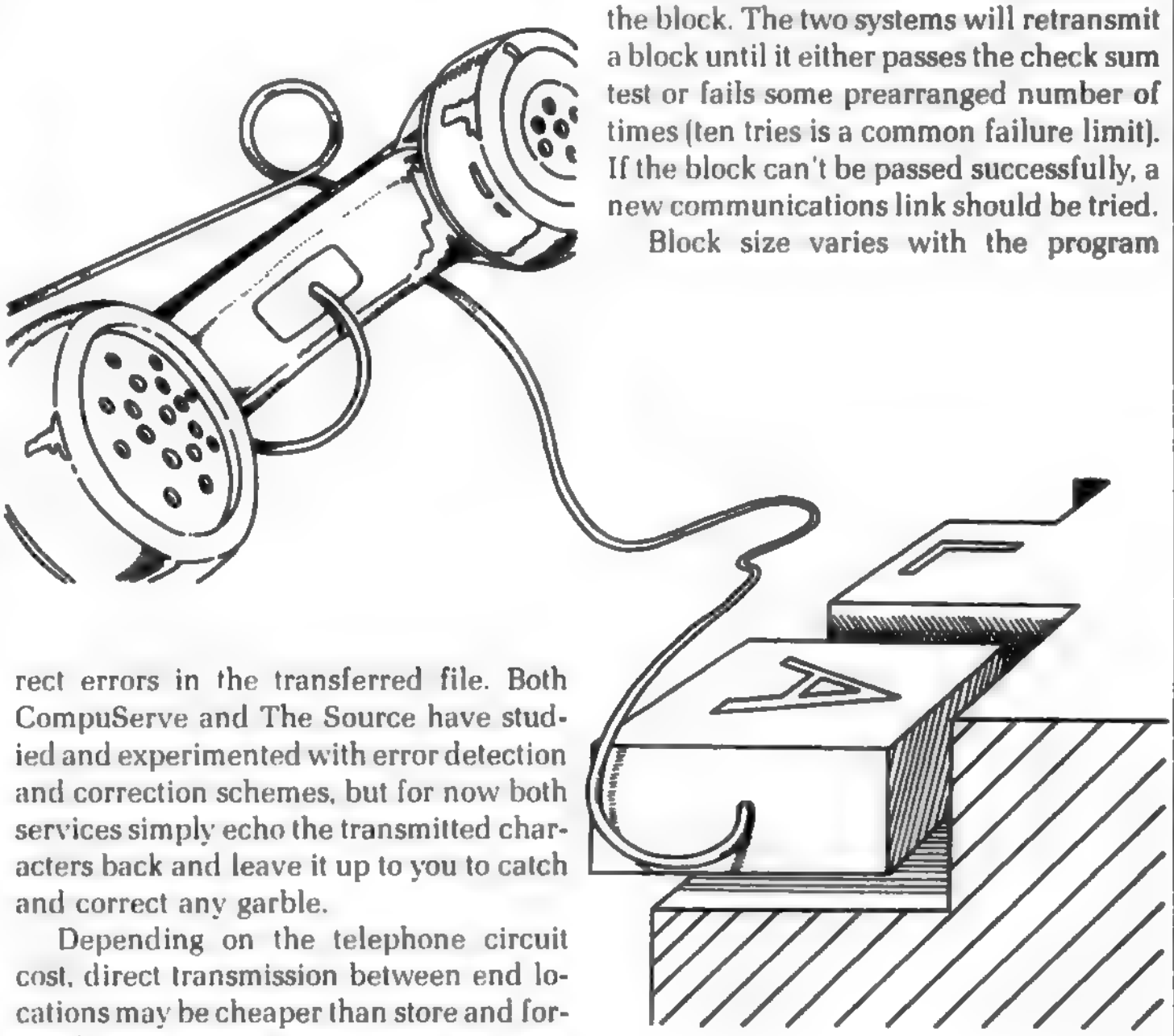


Direct and Indirect Transmission

Files are communicated either directly or indirectly. Indirect transmission involves the use of an intermediate storage facility such as The Source or CompuServe. Direct transmission is an end-to-end link with no storage in between.

Most private information utilities have electronic mail and file systems able to store and forward reasonably long text files. These services offer a convenient way to transfer information because the sending and receiving parties do not have to be communicating at the same time. Utilities provide a way around the limitations of time zones and busy schedules. They also make it possible to distribute more than one copy of text files.

Store and forward services have two drawbacks, however. They can cost well over $25 an hour during the business day, although the rates drop to less than $6 an hour in the early morning. And they do not provide any simple way to detect and correct errors in the transferred file. Both CompuServe and The Source have studied and experimented with error detection and correction schemes, but for now both services simply echo the transmitted characters back and leave it up to you to catch and correct any garble.



Depending on the telephone circuit cost, direct transmission between end locations may be cheaper than store and forward transmission. Direct transmission receiving and transmitting stations can use a file transfer system with error detection and automatic retransmission to insure 100 percent accuracy in the received file.

Protocol File Transfer

A communications protocol is an exchange of specific messages between the transmitting and receiving stations. The transmitting station breaks the file into blocks. Each block of data is analyzed according to a formula and given a numeric value. This number is transmitted as a check sum at the end of the block. The receiving system evaluates the block using the same formula and comes up with its own check sum. If the transmitted and recalculated check sums don't match, the receiving system calls for a retransmission of the block. The two systems will retransmit a block until it either passes the check sum test or fails some prearranged number of times (ten tries is a common failure limit). If the block can't be passed successfully, a new communications link should be tried.

Block size varies with the program

allowances and communications conditions. The practical size of the block depends on the quality of the communications circuit in use. If the circuit is bad, the block should be small (perhaps 256 bytes) to allow frequent checking and avoid lengthy retransmission. If the circuit is good, large block sizes (up to 2K or 3K bytes) should be selected to reduce the time used in computing parity checks.

IF THE CIRCUIT is good, large block sizes should be selected.

Three Programs

Several protocol file transfer programs are available for the IBM PC. The programs described here are also available for other computer systems, including those running under CP/M-80. This broad availability greatly aids transferring files between various kinds of microcomputers.

Crosstalk is a well-known, mature program with many features (manufacturers have had the time to get the bugs out). It has the ability to select block sizes in 256-byte increments. *Crosstalk* passes information through a buffer while going to and from the disk, so it is not limited in the size of file it can send or receive. The program is tailored to work with the Hayes Smartmodem; it uses the PC's color capability, and it has an extensive on-line help menu.

ASCOM isn't as friendly or as well documented as *Crosstalk*, but it is flexible. The block size can be varied in single-character increments. The program includes two timing loops capable of being adjusted in 17 microsecond increments. The capture mode can be selected between outgoing, incoming, or all characters. The average user may not need many of these options, but the capability is there.

Woolf Software markets a file transfer program called *Move-It*, which, in version 2.4 and earlier, is a special purpose package with little support for functions other than file transfer. It does a protocol file transfer, but lacks the ability to do a non-protocol file transmission.

A major drawback among these programs is that they cannot talk to each other.

UTILITIES provide a way around the limitations of time zones and busy schedules.

Only *Crosstalk* has some compatibility with other software using the CLINC protocol. There is still no multiprotocol program available for the IBM PC. */PC*

Our Business Is SOFTWARE . . . To Suit Yours!

If you've just purchased this amazing computer, then you'll want to know about us. We write Software exclusively for the IBM-PC™ and we invite your inquiries. Here are just a few of our programs:

EDUCATIONAL SOFTWARE	
IBM-PC™ Basic Instruction Course	$49.95
Math Primer-All Ages	9.95
1000 Word Spelling Bee	19.95
States & Capitals	14.95
GAMES	
20 Games for the IBM-PC™ —Includes Star Trex, Astro-Orbit, and many more	49.95
OTHER SOFTWARE	
Mail List w/Multiple Field Search	39.95
Household Inventory	14.95
IRA Forecaster	24.95
ACCESSORIES	
6 Foot Keyboard Extension Cable	39.95

All programs supplied on tape—Disk versions add $4.00.
N.J. residents add 5% tax.

SEND FOR FREE CATALOG.

Terms: Cash, Check, Money Order, C.O.D.

NATIONAL SOFTWARE
P.O. Box 5187, North Branch, N.J. 08876
201 - 832-7504

Read It And Reap.

PC Magazine covers software, hardware, applications and most every topic of importance to IBM Personal Computer users. A one year subscription is $27, a 25% saving from the cover price. VISA and MasterCard welcome. Phone our toll free number 800/792-0990 (California only) or 800/227-3800 (elsewhere in the U.S.), Ext. 1136. Or send check or credit card information to: PC, Dept. P, 1528 Irving St., San Francisco, CA 94122.

Get the most out of *your* IBM Personal Computer; Subscribe to PC today!

...OW, YOUR IBM P.C.™ CAN GENERATE PROGRAM CODE IN MINUTES...



ilt magic? No, not magic, but an amazing software package that generates basic code for programs using ıur IBM P.C.™ computer. **THE CREATOR™** by Software Technology for Computers will generate BASIC ɔograms in final form in a matter of minutes. No programming knowledge necessary.

HE CREATOR™ is easy for a beginner or expert to use. Even a novice can produce professional ɔograms. The programs you generate will be accomplished quickly, easily and error-free the first time and eery time. Under most conditions, the programs generated will be almost complete, leaving only a few tatements at most to input yourself.

HIS PROGRAM IS FOR YOU. If you have put off writing your own program because you "can't ɒderstand BASIC," or "don't have the time," then **THE CREATOR™** is for you. Use **THE CREATOR™** to vve time in generating your own programs or as a method to merge new ideas into your existing programs.

l the functions you need are contained within THE CREATOR™. It generates input and output routines, e structures, sort and search routines, dollar formats, totals and more by just answering simple English aiestions. Sound amazing? Well, it certainly is!

HE CREATOR™ comes with extensive documentation and a detailed tutorial to provide you with an ɡparalleled level of trouble-free, user-oriented performance. **THE CREATOR™** is available for only $300 ..S.). If you buy any program this year, this one is a must.

ır a personal demonstration of **THE CREATOR™**, contact your local dealer. If your local dealer does not ırry **THE CREATOR™**, ask him to give us a call.

ırsions for other computer are under development.
M is a trademark of International Business Machines.



Software Technology for Computers
430 A Main Street
Watertown, MA 02172
(617) 923-4334

copyrighted material

the PROGRAM STORE Christmas Software Favorites



LOST COLONY

By David Feitelberg from Acorn

You are the Economic Manager of the world's first space colony. The next support ship from Earth isn't due for another 15 years, and you have instructions to make things go better or get out of office in shame. You must allocate labor, explore new territories, decide on production quotas, determine pay scales and taxes for the most productivity. You're armed with maps and charts. 10 levels of difficulty; "save the game" feature on disk.

Atari/IBM: 32K Disk, **$29.95**
TRS-80: 16K Tape or 32K Disk, **$29.95**

MASTERTYPE

From Lightning

Imaginative and fun, this "space typing" game will teach you the keyboard in SELF DEFENSE! The only way you can defend yourself against the letters coming at you from all corners of the screen is to press each matching letter quickly. As the pace picks up, they're flying so fast, ***there's no time*** to look at the keyboard—you'll ***have to*** learn it by heart!

Apple: 48K Disk, **$34.95**
Atari: 32K Disk, **$39.95**
IBM: 64K Disk



ZORK I, II, or III

From Infocom

You can communicate ***in complete English sentences*** in these interactive adventures, with a vocabulary of over 600 words! Each of these literate games will keep you entertained for 50 hours or more.

Zork I, The Great Underground Empire: Discover 20 treasures, and fight for your life! **ZORK II,** The Wizard of Frobozz: The Wizard will attempt to confound your quest with his capricious powers. **Zork III:** Brand New Adventure!

Apple: 32K Disk
Atari: 32K Disk
IBM: 64K Disk,
$39.95 Each

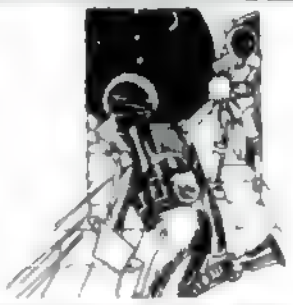


CROSSFIRE

From On-Line

The most original, exciting arcade game—designed exclusively for the home computer—that we've seen! The aliens have taken over your city, and everyone left peaceably—***except you.*** You wander the streets, shooting at aliens firing at you ***from all 4 directions.*** You must move quickly to avoid their CROSSFIRE, gather bonus tokens, and recharge your laser. It's one of our favorites! Requires Joystick.

Apple: 48K Disk, **$24.95**
Atari: 16K Tape or 32K Disk, **$29.95;**
ROM Cartridge (16K), **$44.95**
IBM: 64K Disk, **$29.95**



VOYAGER I

From Avalon Hill

You're on board a spaceship infested with killer robots in this graphic science fiction game. You must clear the 4-level 144-location ship of robots and arm it to self-destruct. Can you do it and escape before you, too, are blown up? High-speed graphics are represented in 3-D perspective representing your eye's view; with instant switching to floor plan maps.

Apple/IBM: 48K Disk, **$24.95**
Atari: 32K Tape, **$19.95;** 32K Disk, **$24.95**
Color/TRS-80:
16K Tape, **$19.95**



TEMPLE OF APSHAI

From Automated Simulations

The first of the DujonQuest series, and still one of the most popular. In exploring over 200 rooms in the magical labyrinth, you will encounter more than 30 kinds of fearsome monsters guarding over 70 treasures. Some of the treasures will help you in your quest, but you must still watch out for the many monsters and traps that spring out from the walls and shadows.

Apple: 48K Disk/**Atari:** 32K Tape or Disk/**IBM:** 64K Disk/**TRS-80:** 16K Tape or 32K Disk, **$39.95**



DEADLINE

An Infocom (TM) Adventure

You have only 12 hours to solve the mystery of the dead man and the locked door—or the killer will strike again...and this time, you may be the victim! Working from an actual dossier on this clever and baffling crime, you must piece together the many clues and watch out for the suspects—one of them is the killer! Use complete sentences and more than 600 words of vocabulary. "Save the game" feature.

Apple/Atari: 32K Disk, **$49.95 IBM:** 48K Disk, **$49.95**



EVEREST EXPLORER

By W. Godwin & D. Knowlton from Acorn

Challenge the world's highest mountain without ever leaving home. In this simulation you must buy the manpower and supplies you will need to support your quest. Now the adventure begins as you conquer the elements and terrain, establishing ever higher encampments. Will you reach Everest's 29,028 foot summit? It can be done, but it takes planning, willpower, and luck.

Atari/IBM: 48K Disk, **$19.95**
TRS-80: 16K Tape or 32K Disk, **$19.95**

FILE MANAGER 800

From Synapse Software

An extremely powerful and versatile database manager for use in both professional and personal applications. You define the format of the records to be filed and FILE MANAGER 800 gives you full control over sorting, searches, and retrieval.

You can store up to 1000 records on each disk and the program will allow up to four drives. Access to any record takes less than 1.5 seconds, and most commands can be entered with self-prompting single key strokes. Works with Text Wizard 2.0 to make editing easier.

Atari: 40K Disk, **$99.95** **IBM (FILE MANAGER PC):**
64K Disk, **$149.95***

***So new** we can only estimate price at press time!*



ASYLUM

From Med Systems

You are sitting alone at 2 AM. Your eyes are bloodshot as you peer into your computer's screen and cry, "I must be CRAZY!" If this has never happened to you, you've never tried ASYLUM. It's Med Systems most ambitious 3-D graphics adventure yet!

ASYLUM places you on a cot in a small (padded?) room. Periodically the janitor lobs a hand grenade through the window. What you do next could mean escape—or disaster.

IBM: 48K Disk, **$39.95 TRS-80:** 16K Tape, **$19.95;** 32K Disk, **$22.95**

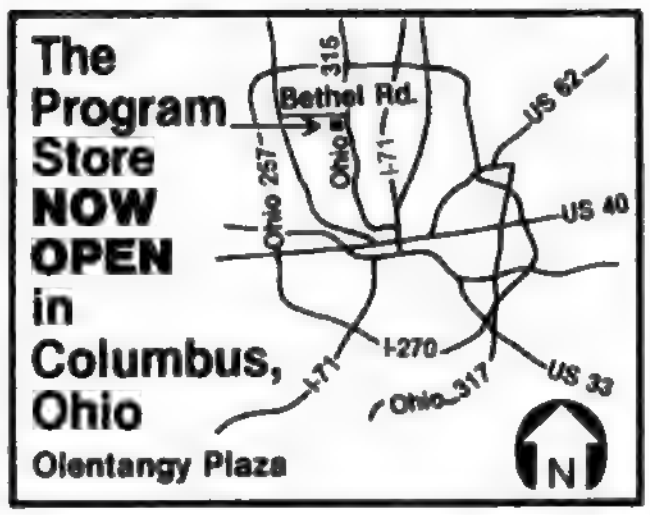


GALAXY

From Avalon Hill

A game of enormous proportions, GALAXY is designed to be played by 1 to as many as ***20 players!*** For each game, the computer sets up a different galactic map of players' planets and neutral planets. Each player's job is to explore the galaxy, find planets with industrial capacity, conquer and colonize them. The problem: they may not ***want*** to be colonized! In that case a battle ensues, complete with sound effects.

Atari: 16K Tape, **$19.95;** 32K Disk, **$24.95**
IBM: 48K Disk, **$24.95**



For Information Call 202-363-9797 **To Order Call Toll-Free 800-424-2738**

the PROGRAM STORE **4200 Wisconsin Avenue, NW, Dept. 18-11-2 Box 9609 Washington, D.C. 20016**

Visit our other stores: Seven Corners Center, Falls Church, VA • W. Bell Plaza, 6600 Security Blvd., Baltimore, MD 829 Bethel Rd., Columbus, OH

THE PROGRAM STORE • Dept. 18-11-2 • Box 9609 • 4200 Wisconsin Avenue, NW • Washington, D.C. 20016

Item Computer Tape/Disk Price

_____

_____

_____

_____

Postage $2.00
Total _____
☐ CHECK ☐ VISA
☐ MASTERCARD

Name_____
Address_____
City_____ State_____ Zip_____
Card #_____ Exp_____

EDITED BY ANDREW FLUEGELMAN

User-To-User

PC readers pass on programming tips, describe their discoveries, and exterminate bugs. This month a tip for faster BASIC.

Run BASIC Run

This month's column starts with an insight into the performance of IBM BASIC that should be of help to anyone writing BASIC programs. As the BASIC manual indicates on page I-14, loops will execute faster if you use integer variables. You can further improve performance by declaring frequently used variables at the beginning of a program. The full explanation, including a benchmark test, follows.

The execution time of a BASIC program, especially of programs containing long FOR-NEXT loops or long programs with many unique variable names, can be dramatically affected by explicit declaration of variable names. This is apparently due to a table search performed each time a variable is referenced during the execution of a program.

During execution, BASIC creates a table of variables that is maintained in memory. Each time a variable name is referenced this table is searched. If the name is not found, the new name is added to the end of this table. This technique causes variables to be allocated in the table as they are referenced, possibly causing frequently accessed variables to be allocated near the end of the table.

To overcome this problem, variables that are referenced frequently or are used as indexing variables in FOR-NEXT loops should be explicitly declared at the beginning of the program. Doing so will place the variable names near the beginning of the variable table in memory, thus decreasing the search time required to locate the correct variable name.

The short program below can be used to demonstrate the effect of explicitly declaring variables. Lines 20–40 are used to declare variables A–Z and thus control the allocation of the variables in the variable table. Variable A will be allocated first, B second, etc. The start time of the test is obtained in line 50 and the end time in line 70. Lines 80–110 convert the times and print the start and end times and the average execution time for the double loop in line 60.

Variable B is used as the index variable for the outer loop since it is accessed only 10 times during execution. Variable A is used as the index variable for the inner loop because it is accessed 20,000 (10 * 2000) times during execution and is the first variable name in the variable table. Running this program will show the average time per execution of the double loop to be approximately 1.5 seconds.

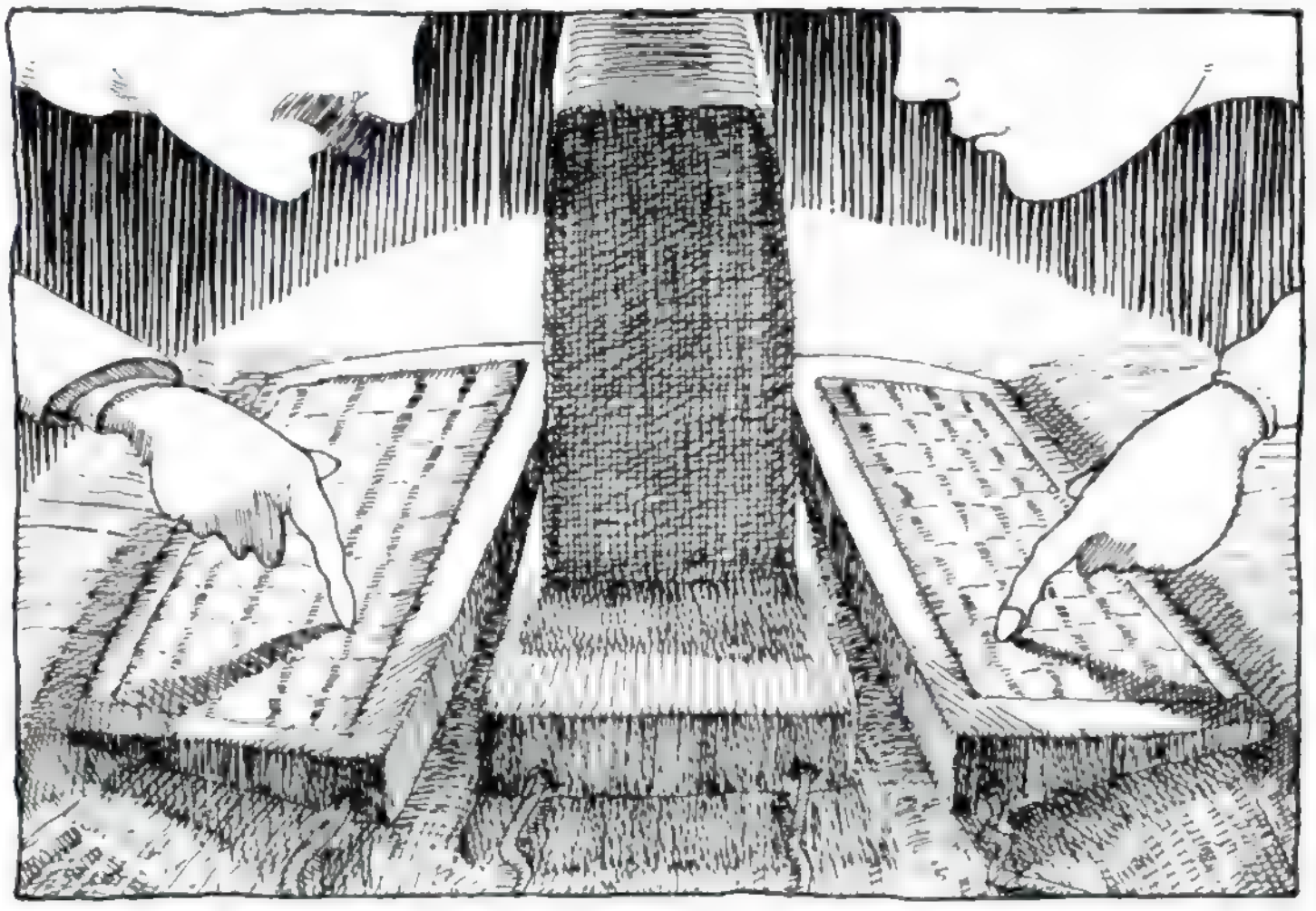
To see the effect of allocation of the variables within the table, change line 60 so that the outer loop index variable is Y and the inner loop index variable is Z. Run the program again: The average time per execution of the double loop is approximately 2.6 seconds versus 1.5 seconds in the first run. This represents a 57 percent increase in execution time.

An additional test to determine the effect of using integer indexing variables versus single precision indexing variables can be made by deleting line 10 of the program and running it again. All variables now default to single precision, thus further increasing the execution time to approximately 3.3 seconds. See Listing 1.

Listing 1: A BASIC Test Program

```
5       'A BASIC test program to determine
6       'the effect of explicit variable
7       'declaration.
8       '
10      DEFINT A-Z
20      A=0:B=0:C=0:D=0:E=0:
        F=0:G=0:H=0:I=0
30      J=0:K=0:L=0:M=0:N=0:O=0:
        P=0:Q=0:R=0
40      S=0:T=0:U=0:V=0:W=0:X=0:
        Y=0:Z=0
50      ST$=TIME$
60      FOR B=1 TO 10:FOR A=1 TO 2000:NEXT
        A:NEXT B
70      SP$=TIME$
80      ST!=VAL(ST$)*3600+
        VAL(MID$(ST$,4,2))*60+
        VAL(MID$(ST$,7,2))
90      SP!=VAL(SP$)*3600+
        VAL(MID$(SP$,4,2))*60+
        VAL(MID$(SP$,7,2))
100     PRINT"Start = ";ST$,"End = ";SP$
110     PRINT"Average Time per loop=";
        (SP!-ST!)/10
120     END
```

Gary D. Reynolds
Austin, Texas



POWERFUL BUSINESS SOFTWARE

ON **IBM** WITH 64K, 5MB+ DAVONG HD, 1-32OK DRIVE AND COLOR

FEATURES:

- Fully integrated modules
- One or two step billing
- History details kept up to 24 months
- GRAPHICS
- FORECASTING
- Color coded screens by module
- Extensive reporting
- Comprehensive documentation
- Backup by module

ORDER ENTRY

Prepares order

Commits Inventory

Prints:

- Picking tickets
- Open order reports
- Back order reports
- Back order allowable by customer

BILLING

Invoice editing and printing

Flags credit limits

Adjusts Inventory levels automatically

Posts sales information

Posts to Accounts Receivable

Discounts by customer or item or combination of both

ACCOUNTS RECEIVABLE

Editing capability before posting to Cash Receipts Journal or to Sales Journal

Comprehensive account detail

Prints:

- Statements at customer option
- Detailed and Summary Trial Balances
- Commission Report

Posts to a General Ledger Journal

INVENTORY CONTROL

Maintains:

- Up to 5 price breaks
- Re-order levels with lead times
- Sales statistics month to date and year to date with last year comparisons
- Physical Inventory with shrinkage adjustments
- Detailed stock status

SALES ANALYSIS

24 month history GRAPHS

Linear forecasting GRAPHS

Analysis Reports by:

Customer

Category

Inventory Item

Sales

Customer Call Planning

Salesman

Inventory Category

Last Sold Date

Profit Margin

Total System Introductory Price

$495 Complete

Limited offer. $995 Normal Retail

DISTRIBUTED COMPUTING SYSTEMS

Martha and Randolph Streets
P.O. Box 185
Lombard, Illinois 60148
(312) 495-0121

Distributed Computing Systems
157 S. Martha Dept S
P.O. Box 185
Lombard, Illinois 60148

Name _____

Street _____

City _____ State _____ Zip _____

_____ Quantity — PBS Software @ $495 Complete — _____ Total

Check, Money Order Enclosed ☐

COD, 25% Deposit Enclosed ☐

Allow 2 weeks for personal checks

For Top Speed

The foregoing also holds true for string variables, and it appears that they are stacked in the same table as the integer variables. Try modifying the above listing by adding the following lines:

```
15   A$="":B$=""
45   Z$=""
```

Now change line 60 to read:

```
60   FOR B=1 TO 10:FOR A=1 TO 2000:A$=
     TIME$:NEXT A:NEXT B
```

Run the program, and you'll get an average time per loop of about 5.4 seconds. Now substitute Z$ in line 60, and you'll get an average time of about 6.6 seconds. To prove that the pointers to the addresses of the string variables are stacked with the integers, substitute B$ in line 60 and you'll see that the average time increases by only a tenth of a second over running it with A$.

To put all this into practice, let's say that the core of your program involved a loop that compared two string variables with the following code:

```
500   FOR I=1 to 1000
510   READ A$:IF A$=B$ THEN GOSUB 1000
...
...
600   :NEXT I
```

You would probably speed up your program by having the first line read:

```
10   DEFINT A-Z:A$="":B$="":
```

A.F.

Print Where?

For those who are tired of using LPRINTs and making sure a printer is attached and turned on, here is a little trick to make software development easier and less expensive. Insert the following lines of code at the beginning of your BASIC program.

```
10   DEV$="SCRN:": CLS:
20   PRINT "Do you wish to use a printer
     (Y/N)? ":
30   ANS$=INPUT$(1): PRINT ANS$
40   IF ANS$="Y" OR ANS$="y" THEN
     DEV$="LPT1:"
50   OPEN "0",1,DEV$
```

Then when writing your program, use either PRINT#1, or PRINT#1, USING for any output you desire to have sent to the screen or printer, depending on the choice input at line 30. Any output that should go to the screen can be done with the normal PRINT statement.

We have found this to be a great time and paper saver here in the Earle A. Chiles Microcomputing Center. The primary function of the center is to teach people about computer-based decision systems, but the facility is also used for continuing education courses in microcomputing.

Dr. Alan R. Raedels
Portland State University
Portland, Oregon

String Stretch

When IBM BASIC compares strings of unequal length, the shorter string is considered "less than" the longer string, hence unequal. (Some other BASICs automatically lengthen the shorter string for comparison.) This can present a problem when trying to compare an input string of undetermined length with a field from records within a random file. The solution is one line of code, as follows:

```
IF LEN(N$)<35 THEN N$=N$+SPACE$
(35-LEN(N$))
```

The above example assumes a field with length 35. The line takes a string of less than 35 characters and pads it with spaces so it is exactly 35 characters and ready for comparison.

Robert C. Avery
Cayucos, California

Scroll Control

IBM's *Guide to Operations* tells us that [Ctrl]-[NumLock] halts scrolling of the screen, but there's a way to do this as a one-hand operation. [Ctrl]-S serves the same function. Furthermore, if you keep [Ctrl] depressed with your fourth finger, you can use your third or index finger to resume and halt scrolling repeatedly.

Dr. Susan Glinert-Cole
South Windham, Maine

Pesky Keys

I've had a problem repeatedly since getting my PC in mid-October 1981. About every 2 or 3 weeks one of the keys on my keyboard decides to quit.

My remedy has been to pry off the guilty key, squirt some photographer's compressed air into the key socket, and remount the key. Sometimes it takes 2 or 3 tries before I can get the spring to seat correctly, but I've never failed to get a key working again.

If this happens to you, try this grassroots, unauthorized service procedure before trucking your keyboard in for an expensive repair.

A.F.

Bug Hunt Continued

This month's final item refers to *User-to-User*, *PC*, June/July 1982, where we saw the first generation of BASIC bugs emerging from their cocoons. As later reported, IBM appeared to have eradicated the plague with BASIC version 1.05 (which is the same as the BASIC 1.10 now being supplied with new PCs).

Reports of unexplained, unexpected, and inaccurate results in BASIC keep coming our way, however. The following item from Ken Snapp gets a bit more technical than this column's norm, but it may prove instructive and shed light on where some of the insects are hatching.

WE SAW THE first generation of BASIC bugs emerging from their cocoons.

The "most bizarre bug" demonstrated in Basictst.300 is the easiest to explain. Refer to appendix pages C-9 and C-10 in the BASIC manual for a description of the Floating Point Accumulator (FAC).

While the IBM documentation does not explicitly state it, a zero value for the exponent byte (4A6) is supposed to be sufficient to define a zero value for single- and double-precision numbers without regard to the contents of the remaining 3 or 7 bytes. This is pointed out in the TRS-80 documentation for Microsoft BASIC.

When a numeric variable is not found in the variable table search, the routine sets bytes 4A3 and 4A4 of the FAC to zero in case the variable is an integer, and sets byte 4A6 to zero to take care of single- and double-precision variables. Thus bytes 49F-4A2 and 4A5 are left unchanged. In the Basictst.300 program, whatever value is assigned to the variable B will be left in the 4A5 location.

```
5    'Basictst.300
10   INPUT "B= ":B
20   PRINT "A= ":A
30   IF A=0 THEN PRINT "A equals zero"
     ELSE PRINT "BUG!!!"
40   PRINT : GOTO 10
50   END
```

The print routine in line 20 contains

IBM
personal computer
UCSD
p-System™IV-1

A superior implementation of the UCSD p-SYSTEM is available NOW for your IBM Personal Computer.
Network Consulting has added many features which the professional programmer will find useful. These features are not available from any other sources.

- Hard disk support for Corvus, Tall Grass Technology and others
- 25% more floppy storage, without adding or modifying hardware, retaining compatibility with standard IBM diskettes
- Double sided/double tracking/fast stepping floppy disk drive support
- RAM disk support (uses up to 512k RAM)
- Adaptable system support for adding custom I/O drivers
- Remote Terminal support
- XON/XOFF flow control for serial printers
- Disk write verification
- and more!

Standard p-System features include:

- Program chaining
- Standard I/O redirection (including command files)
- Dynamic program overlays
- Support for asynchronous processes and concurrency primitives in Pascal
- Fast Pascal, Fortran and Basic compilers, all producing universal p-code programs
- A powerful screen oriented editor that runs in both programming and text editing modes
- A Native machine Code Generator that processes your Pascal, Fortran and Basic programs to convert parts of them to Native machine code
- Dynamic runtime binding of separately compile programs and units.
- Turtlegraphics for easy graphics displays
- Print spooler for background printing
- Symbolic debugger
- Extended memory support
- A library of program modules and other utilities

48 HOUR DELIVERY — CALL NOW!

UCSD p—SYSTEM from Network Consulting

The only serious choice for business

TM The Regents of the University of California

MasterCard VISA

Network Consulting Inc.
A106 - 1093 W. Broadway
Vancouver, B.C.
Canada V6H 1E2
(604) 738-3500

code that recognizes that the exponent for the variable A is zero, ignores the remainder of the FAC, and prints a zero. The comparison routine invoked in line 30, however, compares all 4 bytes without testing to see if the exponent byte is zero. Therefore, since byte 4A5 of the FAC was not changed from whatever it contained after evaluating variable B, the comparison in line 30 will be equal only when the single-precision representation of the variable B leaves a zero in byte 4A5 of the FAC.

Note that BASIC D1.05/1.10 corrects the single-precision comparison routine but not the double-precision comparison. Simply adding a DEFDBL A-B statement to the Basictst.300 program will produce the same error in those new versions of Disk BASIC.

Investigation of the double-precision print bug has produced a number of strange occurrences, but no definitive conclusions. The observable problems in double-precisions, such as that illustrated in Basictst.100 (*PC*, June/July 1982), seem to have been fixed in BASIC D1.05/1.10.

Various tests have disclosed, however, that heavy use is made of a double-precision power of 10 table in ROM from F600:5F02 through 6169. Comparing the decimal power of 10 values (1D-38 through 1D-01) from this table with calculations made on another Microsoft BASIC system shows numerous discrepancies in the IBM ROM table values. Since this table is used in so much double-precision processing, table errors could very well be responsible for at least some of the odd results.

A simple manual calculation can be used to illustrate one error in the ROM table. The table value for .1 is contained at location F600:602A. Reversing the order of the mantissa bytes so that the most significant byte is on the left and inserting the suppressed leading one, we obtain a hex value of CC CC CC CC CC CC CD. This is correct since .1 is represented by a repeating binary value with the last byte rounded to reflect the continuing CC pattern. The table value for .01 is at location F600:6022. Again reversing the order of mantissa bytes and inserting the leading one, we obtain a hex value of A3 D7 0A 3D 70 A3 D8. Now we can multiply this value for .01 by ten through a series of additions, then compare the result against the table value for .1.

```
   A3 D7 0A 3D 70 A3 D8
   A3 D7 0A 3D 70 A3 D8
-------------------------------------------
1 47 AE 14 7A E1 47 B0  =  .01 X 2
1 47 AE 14 7A E1 47 B0
-------------------------------------------
2 8F 5C 28 F5 C2 8F 60  =  .01 X 4
2 8F 5C 28 F5 C2 8F 60
-------------------------------------------
5 1E B8 51 EB 85 1E C0  =  .01 X 8
1 47 AE 14 7A E1 47 B0
-------------------------------------------
6 66 66 66 66 66 66 70  =  .01 X 10
                           (should be = .1)
```

Shifting left 1 bit to place the decimal point properly, this becomes CC CC CC CC CC CC CE, which is 1 bit greater than the table value for .1. This small difference may seem trivial, but it causes some strange things to happen. For an example, try the following program:

```
10   IF .1# <> .10# THEN PRINT "WHAT?"
20   END
```

In a possibly related situation, the single-precision values for .1 and .10 are stored as different values. For example, the statement PRINT .1 will print .1 while PRINT .10 will print 9.999999E-02.

Finally, confirming the comment in *P-Communiques* (*PC*, April/May 1982) that BASIC is "recompiled code done for the 8080," there are indeed numerous sections of code that are obviously direct translations from 8080 code. A very common sequence of instructions is:

```
MOV BH,DH
MOV BL,DL
```

The single 8088 instruction MOV BX,DX accomplishes the same result in two fewer bytes. Microsoft was no doubt under a great deal of time pressure in getting out a workable initial version of their superb BASIC. Now that a year has passed since the introduction of the machine, it seems reasonable for us to expect a revised version that makes more efficient use of the rich 8088 instruction set.

Ken Snapp
Denver, Colorado

Share Your Discoveries

When you learn something from which your fellow PC users can benefit, pass it on through these pages. You'll encourage others to return the favor, plus we'll pay from $25 to $100 for each tip published. Mail submissions to User-to-User, PC, *1528 Irving St., San Francisco, CA 94122.*

ALL NEW FROM AEROCOMP

DISK DRIVES • MONITORS • PRINTERS FOR YOUR IBM PC

• **INTERNAL DRIVES (A & B)**
"FLIPPY" * or STANDARD 40-TRACK
Standard (List $569.99) ....$249.00 each
"FLIPPY" (Not available from IBM).....
.....$269.00 each
Purchase your IBM PC without drives but with the disk drive controller/adapter & cable and the Disk Operating System (DOS) and SAVE A BUNCH!

• **EXTERNAL DRIVES (C & D)**
Standard.....$289.00 each
"FLIPPY".....$319.00 each
These drives are complete with matching case & power supply.

• **EXTERNAL 2-DRIVE CABLE.....**
.....$23.95
*"FLIPPY" allows flipping the diskette over and reading/writing to the back side. Cuts diskette cost in half. NO special diskettes required.

• **PRINTER**
EPSON MX80
$469.00
(Same as the IBM 21201 printer selling for $754.99)

• **PRINTER CABLE**
$9.95
*With purchase of a printer (purchased separately)

• **ZENITH 12" Monitor**
Green Phosphor
$135.00
cable $7.00
(Monitor requires IBM 21022 Color/Graphics Card in your PC)

ORDER NOW!

To order by mail enclose check, money order, VISA or MASTERCHARGE card number and expiration date, or request C.O.D. shipment. Texas residents add 5% sales tax. Add 1½% of total for shipping & handling (Cont. US). Please allow 2 weeks for personal checks to clear our bank. No personal checks will be accepted on C.O.D. shipments-cash, money orders or certified checks only. You will receive a card showing the exact C.O.D. amount before your shipment arrives. Be sure to include your name and shipping address. You will be notified of the scheduled shipping date. Your bank credit card will NOT be charged until the day we ship!!

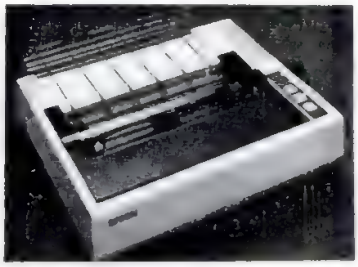
CALL TOLL FREE FOR FAST SERVICE
(800) 824-7888, OPERATOR 24
FOR VISA/MASTERCHARGE/C.O.D. ORDERS
California dial 800 852 7777 Operator 24 Alaska and Hawaii dial 800 824 7919 Operator 24
TOLL FREE LINES WILL ACCEPT ORDERS ONLY!
For Applications and Technical information call 214 337 6346 or drop us a card

Dealers inquiries invited

AEROCOMP
Redbird Airport, Bldg. 8
P.O. Box 24829
Dallas TX 75224

COOSOL COMPUTER PRODUCTS

EPSON PRINTERS



• EPSON MX70	$288
• EPSON MX80 GRAFTRAX+	CALL
• EPSON MX80 F/T GRAFTRAX+	CALL
• EPSON MX100 GRAFTRAX+	CALL
• NEC PC-8023A-C	CALL
• NEC 3550	CALL
• NEC 3510, 3515, 3530	$1695
• NEC 7710, 7715, 7730	$2275
• NEC 7720, 7725	$2645
• C.ITOH 8510AP CALL • 8510ACD	CALL
• C.ITOH 1541SP CALL • 1541SRE	CALL
• C.ITOH F10-40PU $1395 • F10-40RU	$1395
• C.ITOH F10-55PU $1795 • F10-55RU	$1795
• OKIDATA 82A CALL • 83A	CALL
• OKIDATA 84A .... CALL • 82A TRACTOR	$55
• TALLY MT 1602 MT 1605	$1495
• TALLY MT 1802 MT 1805	$1795
• DIABLO 630 and 620 SERIES	CALL
• QUME SPRINT 5 45/RO,KSR & 55/RO,KSR	CALL
• ANADEX ADX-9500-P, ADX-9501-P	$1295
• COMREX CR-1-S, CR-1-C, CR-1-Q	CALL
• SMITH-CORONA TP-1	CALL

IBM/NEC 12" COLOR CHARACTER DISPLAY



Color RGB Monitors

• NEC JC-1202DH HI—RES. RGB	$799
• AMDEK COLOR II HI—RES. RGB	$749
• ELECTROHOME 13" HI—RES RGB	$749

MODEMS

• HAYES SMARTMODEM (300 BAUD)	$229
• HAYES SMART MODEM (300 & 1200 BAUD)	$595
– RS-232C COMPATIBLE	
– FULL and HALF-DUPLEX OPERATION WITH BOTH	
– TOUCH TONE and PULSE DIALOG	
– AUTO-ANSWER/DIAL/REPEAT	
– COMPLETELY PROGRAMMABLE	
– BUILT-IN AUTO MONITOR	
– STATUS AT A GLANCE	
– DIRECT-CONNECT DESIGN	
• HAYES CHRONOGRAPH	$209
• NOVATION AUTO-CAT AUTO ANS	$219
• SIGNALMAN MARK 1 (300 BAUD)	$89
• U.D.S. 103 0ALP (300 BAUD)	$175
• U.D.S. 103 JLP (300 BAUD)	$199
• U.D.S. 202 SLP (1200 BAUD)	$249

IBM Software

• MICRO LAB TAX MANAGER	$199
• SORCIM SUPERCALC	$209
• SORCIM SUPERWRITER	$299
• CONTINENTAL HOME ACCOUNTANT PLUS	$112
• CONTINENTAL MATHEMAGIC	$69
• DENVER EASY EXECUTIVE ACCOUNTING	$520
• VISICORP 64/256K VISICALC	$199
• VISICORP VISITREND/VISIPLOT	$249
• VISICORP VISIDEX	$199
• DATAMOST WRITE ON/IBM-WORD PROC	$99
• MICRO PRO WORDSTAR	$289
• MICRO PRO MAILMERGE	$90
• MICRO PRO SPELL STAR	$165
• INFORMATION UNLIMITED EASY FILER	$299
• INFORMATION UNLIMITED EASY SPELLER	$139
• INFORMATION UNLIMITED EASY WRITER II	$269
• PEACHTREE	CALL
• OTHER IBM SOFTWARE	CALL

Other Computers

• ATARI 800 (16K)	$659
• ATARI 400 (16K)	$329
• ATARI Accessories & Software	CALL
• ALTOS Computer Systems	CALL
• ADDS Computer Systems	CALL
• NEC PC-8001A, PC-8012A, PC-8031A, and JB-1201 (NEC SYSTEM)	$2149
• NEC Other CPU's and Software	CALL
• DYNABYTE 5605-6-1	$5999
• DYNABYTE OTHER SYSTEMS	CALL
• SANYO MBC-1000	$1599
• SANYO MBC-2000	$2699
• SANYO MBC-3000	$4999
• XEROX 820 SYSTEM w/5 1/4" DRIVES	$2499
• XEROX 820 SYSTEM w/8" DRIVES	$2995
• SOFTWARE FOR THE ABOVE	CALL

Monitors

• NEC JC-1202DH RGB HIGH RES. COLOR	$799
• AMDEK COLOR-II RGB HIGH RES. COLOR	$769
• NEC PC-1201M(A) HIGH RES. GREEN	$179

Terminals

• TELEVIDEO 910 $595, • 912	$705
• TELEVIDEO 920 $750, • 950	$959
• ADDS Viewpoint A1, A2, A3,	$535

Call 7 days a week **(800) 854-8498** **Calif. (714) 545-2216**

COOSOL, INC. P.O. BOX 743, ANAHEIM, CALIFORNIA 92805-0743

THE IBM® PC IN YOUR SNA NETWORK

Blue Lynx™
MAKES YOUR IBM PC LOOK LIKE A 327X UNDER

SDLC

Blue Lynx SO1 – SDLC Hardware & Software – Available now $680.00

Blue Lynx BO1 – BISYNCH Hardware & Software –
Available Dec. '82 $490.00

Blue Lynx NO1 – LA Network Hardware & Software – Available Feb. '83

Direct Service and Support Via Manufacturer's Hot-Line

Also Customized Environments

Please write stating your corporate requirements to:

TECHLAND SYSTEMS INC.
39 Carwall Ave. Mt. Vernon, NY 10552 (914) 699-8467

PROGRAMMING/KARL KOESSEL

Color Palettes And Color Chips

PColor *teaches you how to choose a color monitor, checks the brilliance on your screen, and demonstrates the color combinations that are possible on the IBM PC.*

Hundreds, if not thousands, of pieces of computer equipment are on the market with so many capabilities that choosing your own system may be difficult. But a new software program makes choosing color monitors somewhat easier. IBM's PC Basic Color statement allows users to check the brilliance and shades of colors as they appear on the various monitors.

THE PROGRAM allows users to test monitors before purchasing them.

Especially helpful to people who depend on color graphics is that the program allows users to test monitors before purchasing them and to check which colors can be displayed on the screen simultaneously.

The Color statement for IBM BASIC can be used in text mode when you have either the monochrome display adapter or the color/graphics adapter in place. With the monochrome display adapter, programs use the Color statement to indicate whether text (any of the 242 letters, numbers, and special characters) will be displayed in white on black, blinking, reverse image, invisible, highlighted, or underscored characters. When used with a color/graphics monitor, the Color statement determines the color of the characters themselves (foreground color), the color of the box around each character (background color), and the color of the border around the entire screen (border color). (Gray scales instead of color may be discernible on black and white monitors used with the color/graphics adapter.) For text mode applications the format for the Color statement is:

COLOR [*foreground*] [,*background*] [,*border*]]
where:

foreground:	a numeric expression between 0 and 31.
background:	a numeric expression between 0 and 7.
border:	a numeric expression between 0 and 15.

Each parameter specifies a color by number; for example, zero represents black. Thus with the color/graphics adapter, text printed after the statement Color 1,2,3 will be in blue characters in green boxes on a screen bordered by a darker blue, or cyan. With the monochrome monitor, text printed after this same Color statement will be in underscored characters on a black background. (The border screen is always black with the monochrome adapter.)

In addition to Text mode, the color/graphics adapter supports medium-resolution graphics and high-resolution graphics. High-resolution graphics allows only black and white images. Executing a Color statement in this mode will generate an

PColor Program

```
10 KEY OFF
20 DEFINT A-Z
30 GOSUB 110          'Define pointers for
                       function keys
40 FK=7               'Initialize variables
50 PALETTE=1
59 '*****  MAIN LOOP  ****************
60 GOSUB 350          'Change display?
69 '       Change background color or...
70 IF SCR THEN GOSUB 1750 ELSE
     GOSUB 1020 '...change border color
80 FOR PAUSE=1 TO 2000   'Pause a while
90 NEXT
100 GOTO 60 'Go through main loop again
108 '*************************************
109 '*Define pointers for function keys
110 ON KEY(1) GOSUB 250
120 ON KEY(2) GOSUB 260
130 ON KEY(3) GOSUB 270
140 ON KEY(4) GOSUB 280
150 ON KEY(5) GOSUB 290
160 ON KEY(6) GOSUB 300
170 ON KEY(7) GOSUB 310
180 ON KEY(8) GOSUB 320
190 ON KEY(9) GOSUB 330
200 ON KEY(10) GOSUB 340
210 FOR FK=1 TO 10     'Activate all ten
220    KEY(FK) ON      'function keys
230 NEXT
240 RETURN
249 '*****  Flag FK set by function key
250 FK=1:RETURN
260 FK=2:RETURN
270 FK=3:RETURN
280 FK=4:RETURN
290 FK=5:RETURN
300 FK=6:RETURN
310 FK=7:RETURN
320 FK=8:RETURN
330 FK=9:RETURN
340 FK=10:RETURN
349 '*If FK, change display accordingly
350 ON FK GOSUB 370,430,470,470,520,570,
620,710,800,850
360 RETURN
369 '*****  Displays available  *******
370 FK=0  'Toggle between SCREENs 0 & 1
380     SCR=(SCR+1) MOD 2
389 '     Either prepare text mode or...
390     IF SCR=0 THEN GOSUB 620:RETURN
399 '...prepare med. res. graphics mode
400     W=0          'Clear text mode flag
410     GOSUB 1330
```

CP/M '83

AN INTERNATIONAL EXPOSITION AND CONFERENCE FOR THE CP/M INDUSTRY AND THE CP/M USER

FRIDAY-SUNDAY, JANUARY 21-23, 1983
MOSCONE CENTER, SAN FRANCISCO

CP/M '83 is an international exposition and conference for CP/M users, manufacturers, independent software developers, OEM's, venture capitalists, software publishers, distributors, and dealers. The exposition portion of the event will be the largest presentation of CP/M based hardware and software ever assembled. Hundreds of exhibits will showcase the full spectrum of application packages, development aids, peripherals, accessories, publications, and services for CP/M based computers.

The seminar and conference program will include noted leaders from the software industry such as Gary Kildall, Sol Libes, Adam Osborne, Tony Gold, Chris Morgan and John Rowley, who will conduct informative discussions exploring CP/M applications, technical information, development aids, venture capital programs and software distribution. End user workshops will show users how to get the most from their CP/M computer.

CP/M '83 is sponsored by Digital Research, Inc., the creators of CP/M. Over 650 different companies support CP/M and more than 5,000 companies produce CP/M application packages . . . Most of these firms will be represented at CP/M '83 . . . So attendees will see and try out application packages for every profession, plus state-of-the-art programs for word processing, telecommunications, graphics, and data base management. Also on display or as workshop subjects are development aids to help you program faster, plus hundreds of CP/M compatible products appropriate for your applications.

At CP/M '83 you can explore the entire world of CP/M under one roof and learn more in three days that you could in six months.

Call or write Northeast Expositions for the schedule of seminars, workshops and conferences and San Francisco hotel information reservation forms.

Registration is $10 for one-day exhibits-only ticket, or $20 for a three-day exhibits ticket which includes admission to workshops, seminars and conferences. To register send check (payable to Northeast Expositions) with return address.

CP/M '83

Sponsored by Digital Research, Inc.
Friday-Sunday
January 21-23, 1983
Moscone Center, San Francisco
Show Hours: 11 am to 6 pm daily
Seminars (for the trade) 9 am to 11 am
User Conferences & Workshops 11 am to 5 pm

For information on exhibiting, call or write
Northeast Expositions, Inc.
824 Boylston Street, Chestnut Hill, Massachusetts 02167
Telephone: 617-739-2000.

PColor Program

```
420     RETURN
430 FK=0 'Change palette, graphics only
440     PALETTE=(PALETTE+1) MOD 2
450     GOSUB 1780 'Update palette info
460     RETURN
470 ON FK GOTO 510,480,470,500   'Pause
480     GOSUB 350        'Change display?
490     GOTO 470          'Still pausing
500     FK=0'Continue bkgrnd/brdr cycle
510     RETURN
520 FK=0                 'Rowed foreground
530     IF RB=0 OR W=41 THEN RETURN
540     RB=0    'Clear rowed bkgrnd flag
550     GOSUB 1100  'Print text display
560     RETURN
570 FK=0                 'Rowed background
580     IF RB=1 OR W=41 THEN RETURN
590     RB=1     'Set rowed bkgrnd flag
600     GOSUB 1100
610     RETURN
620 FK=0                  'WIDTH 40, text
630     IF W=1 THEN RETURN
640     WIDTH 40
650     W=1    'Flag set to first column
660     V=9          'First line of text
670     GOSUB 900     'Prepare text mode
680     GOSUB 1050  'Update border info
690     GOSUB 1100
700     RETURN
710 FK=0                  'WIDTH 80, text
720     IF W=41 THEN RETURN
730     WIDTH 80
740     W=41 'Flag set to middle column
750     V=1          'First line of text
760     GOSUB 900
770     GOSUB 1050
780     GOSUB 1100
790     RETURN
800 FK=0            'Standard characters
810     IF BLINK=0 THEN RETURN
820     BLINK=0     'Clear blinking flag
830     GOSUB 1100
840     RETURN
850 FK=0            'Blinking characters
860     IF BLINK=1 THEN RETURN
870     BLINK=1       'Set blinking flag
880     GOSUB 1100
890     RETURN
899 '*****  Text mode  ****************
900 SCREEN 0,1,0,0
910 FOR FK=5 TO 10     Activate last six
920     KEY(FK) ON     function keys
930 NEXT
940 KEY(2) OFF         'Deactivate KEY(2)
950 COLOR 7,0
960 CLS
970 LOCATE ,8,0
980 PRINT "COLOR TEXT (SCREEN 0,1,,)"
990 PRINT
1000 GOSUB 1860      'Print instructions
1010 RETURN
1019 '*****  Change border color  *****
1020 BORDER=(BORDER+1) MOD 16
1030 GOSUB 1050
1040 RETURN
1049 '*****  Update border information
1050 LOCATE 25,9+W/2
1060 COLOR BORDER,0,BORDER
1070 IF BORDER MOD 8=0 THEN COLOR ,7
1080 PRINT USING " Border is COLOR _#_#
# ";BORDER;
1090 RETURN
1099 '*****  Print text display  ******
1100 LOCATE V,W
1110 IF RB=1 AND W=1 THEN 1190
1120 FOR F=0 TO 15      'Rowed foreground
1130     LOCATE V+F,W
1140     FOR B=0 TO 7
1150         GOSUB 1280          'Print te
1160 NEXT B,F
1170 IF W=1 THEN 1230 'Skip if WIDTH 40
1180 PRINT " ";
1190 FOR B=0 TO 7       'Rowed background
1200     FOR F=0 TO 15
1210         GOSUB 1280          'Print text
1220 NEXT F,B
1229 'Using monochrome display adapter?
1230 DEF SEG=0
1240 IF (PEEK(1040) AND 48)=48 THEN 1270
    'If so, all done. Otherwise the ...
1249 'color monitor needs a white space
in last column of the 24th monitor line
1250 DEF SEG=&HB800
1260 POKE 80*24*(1-1*(W=41))-1,64+32+16
1270 RETURN
1279 '*****  Text printing routine  ***
1280 FG=F+16*BLINK
1290 COLOR FG,B   'Set new frgrnd/bkgrnd
1300 IF F=15 AND B=7 THEN PRINT "1",7";:
GOTO 1320
1310 PRINT USING "##_,# ";FG;B;
1320 RETURN
1329 '* Medium resolution graphics mode
1330 SCREEN 1,0,0,0
1340 FOR FK=5 TO 10   'Deactivate last
1350     KEY(FK) OFF   'six function keys
1360 NEXT
1370 KEY(2) ON          'Activate KEY(2)
1380 LOCATE ,5,0
1390 PRINT "MEDIUM RESOLUTION COLOR GRAP
HICS"
1400 PRINT SPC(13)"(SCREEN 1,0,,)
1410 GOSUB 1860      'Print instructions
1420 LOCATE 9,1
1430 PRINT "Changing palettes changes"
1440 PRINT "the 4 foreground colors"
1450 PRINT "displayed at one time."
1460 FOR F=0 TO 3         'Boxes of color
1470     LOCATE 10+F*4,30
1480     PRINT F;"="
1490     TOP=65+F*32              'Top line
1500     BOT=TOP+23            'Bottom line
1510     LINE (272,TOP)-(319,BOT),F,BF
1520 NEXT
1530 LOCATE 13,1
1540 PRINT "For the background and"
1550 PRINT "palette chosen by the"
1560 PRINT "statement COLOR "
1570 PRINT "a foreground number of 0"
1580 LOCATE 18,1
1590 PRINT "Text (for SCREEN 1,0,,)"
1600 PRINT "is printed in foreground"
1610 PRINT "color 3. Text is invisible"
1620 PRINT "for COLOR 6,0 and COLOR 7,1"
1630 PRINT "and COLOR 14,0 and COLOR 15,
1"
1640 LOCATE 24,12
1650 PRINT "Palette is COLOR ";
1660 LOCATE 25,10
1670 PRINT "Background is COLOR ";
1680 FOR BRKT 25 TO 31  Extend brackets
1690     LOCATE 40-BRKT,BRKT
1700     PRINT "/"
1710     LOCATE BRKT-8,BRKT
1720     PRINT "\"
1730 NEXT
1740 RETURN
1749 '*****  Change background color **
1750 BACKGROUND=(BACKGROUND+1) MOD 16
1760 GOSUB 1780
1770 RETURN
1779 '*****  Update bkgrnd/palette info
1780 LOCATE 15,17
1790 PRINT USING "## ,#";BACKGROUND,PALE
TTE
1800 LOCATE 24,29
1810 PRINT USING " ,#";PALETTE;
1820 LOCATE 25,30
1830 PRINT USING "## , ";BACKGROUND;
1840 COLOR BACKGROUND,PALETTE
1850 RETURN
1859 '*****  Function key instructions
1860 PRINT "[F1] = To Change Mode (TEXT
or GRAPHICS)"
1870 IF SCR=0 THEN LOCATE 4,1:GOTO 1890
1880 PRINT SPC(19)"[F2] = Change Palette
"
1890 PRINT "[F3] = To Pause     ";
1900 IF SCR=0 THEN PRINT "  ";
1910 PRINT "[F4] = To Continue"
1920 IF SCR THEN 1990
1929 'Following for text display only
1930 IF W=41 THEN 1950     'WIDTH 80 has
    both rowed frgrnd and rowed bkgrnd
1940 PRINT "[F5] = Rowed Frgrnd  [F6] =
Rowed Bkgrnd"
1950 LOCATE ,1
1960 PRINT "[F7] = WIDTH 40      [F8] =
WIDTH 80"
1970 PRINT "    Foreground character cho
ices:"
1980 PRINT "[F9] = Normal    or  [F10]=
Blinking"
1990 RETURN
2000 END
```

illegal function call error. Medium-resolution graphics, however, does allow color. To enter this mode, execute the BASIC statement SCREEN 1,0. Subsequent statements will be executed according to the rules for medium-resolution color graphics until another Screen statement sets a new mode. SCREEN 0,1 will reinstate the high-resolution graphics mode.

In the medium-resolution graphics mode the Color statement chooses one of 16 background colors. Not to be confused with the background in Text mode, the background in medium-resolution graphics mode refers to the entire screen, including the border, save those points that have been colored by graphic statements (Pset, Preset, Line, Circle, Paint, and Draw) and printed text. When a new background color is chosen (through execution of a Color statement), the entire background is immediately recolored.

THE COLOR statement determines the color of the characters themselves.

Each graphics statement can put one of four colors on the screen by specifying the color number: 0, 1, 2, or 3. (Printed text is always displayed as color number 3.) Color number 0 is clear; it looks the same as the background color. The colors associated with the numbers 1, 2, and 3 depend upon which of the two palettes you are using. The available colors are:

Color	Palette 0	Palette 1
1	Green	Cyan
2	Red	Magenta
3	Brown	White

Palettes are selected by the Color statement. When you change the palette, all the

Advertisement

NEW

Software Breakthrough...

NEW *QUIKPRO + PLUS* WRITES PROGRAMS FOR YOU IN MINUTES ON *YOUR* Micro

Technical Review
by Wayne Hepburn

QUIKPRO + PLUS is a new breakthrough in software for microcomputers from ICR-FutureSoft.

Until now, whenever you wanted a new separate program in BASIC (Microsoft Basic/MBasic/Basic 80/Oasis Basic), you had to spend a lot of dollars for it, or a lot of hours creating it (if you have the know-how). That's all in the past now.

Anybody who can turn on a computer can write a program, quickly, with this new *Quikpro + Plus* software which generates programs for you. *Quikpro + Plus* is the invention of Joseph Tamargo of Florida. His brilliant approach to program writing allows you to tap the real power and speed of your microcomputer, and it is about time this happened.

I interviewed him to find out more about *Quikpro + Plus* and pass this valuable information to you. He told me "The best part of this software is that it gives you a separate custom program every time you use it. The resulting program is produced, error-free, in BASIC (Microsoft Basic/MBasic/Basic 80/Oasis Basic, as appropriate to your system) for you by *Quikpro + Plus*. What's more, you can list your new program, look at it, see what makes it tick, and modify it as you wish."

You can also, customize, enhance, alter, and even copy the programs you create with *Quikpro + Plus*. This is because programs created by *Quikpro + Plus* are structured, easy to follow, and include many REMARKS statements right in the program listing. I don't know of any other software with the flexibility and ease of use I found in *Quikpro + Plus*.

HUNDREDS OF APPLICATIONS...

For Education, Business, Hobby, Home, Science, Personal, etc. a partial list includes programs like these: Financial Forecasting, Expense Planning, Data Access and Retrieval, Modeling, Record Keeping of all kinds, Statistical Data Banks, and much, much more. *Quikpro + Plus* cuts the time it takes to generate a new custom program down to a few minutes. That's true. I saw a letter from a user who created a separate program in Basic within fifteen minutes after reading the clear, simple, complete Documentation & Operating Manual for *Quikpro + Plus*. The software will generate File Handling and Data Entry Programs in a file format, drawn right on the screen by user. Programs created by *Quikpro + Plus* produce standard ASCII Data Files allowing data to be easily accessed by other programs, other micro's, and even main frames.

HOW IT WORKS...

The operation of *Quikpro + Plus* is simple and easy. On your screen you answer questions which appear in plain English. The answers generate error-free Filing & Data Entry Programs for you...instantly. This completely eliminates the tedious and time consuming development you normally go through to write a program. Since the instructions are right on the screen you don't need any programming skills to operate *Quikpro + Plus*. Quickly, you get a fully independent new program ready to run on your system. After you create the new program you can remove *Quikpro + Plus* and stick it on the shelf until the next time you create a custom program.

PRINTS REPORTS & MANUALS...

There is a full report printing capability put into your new separate program by *Quikpro + Plus*. You can even print out in formats different from the File Format you used without altering the Record Data. Or you can selectively print portions of Files or selected fields from selected Records. Just about anything you want can be reported out from the Data Base associated with the new custom program you wrote.

PERFORMS CALCULATIONS...

You can perform all manner of computations among various fields in each record. You can selectively calculate and print resulting data only, or Data Base and results, or alter Records by calculation results, and so forth. The possibilities seem unlimited. And keep in mind that the power and features I am talking about end up in the separate new custom program *Quikpro + Plus* writes for you.

This software is ready to ship immediately and you can start writing programs the day you get in. In fact, ICR-FutureSoft guarantees your satisfaction or you can return it for a full refund in ten days after delivery. How's that for confidence? Mr. Tamargo said "There isn't any risk to us...our product *works* like it's supposed to work and users are very well satisfied. We are glad to guarantee satisfaction."

You get *Quikpro + Plus* by mail or phone directly from ICR-FutureSoft. Just write them, or call their Toll-Free phones and specify your model and version requirements from the list that follows:

For CP/M with Microsoft Basic $259
(same as MBASIC/Basic 80)
APPLE • INTERTEC • NORTH STAR • OSBORNE • XEROX 820 • HEATH/ZENITH • CROMEMCO • ALTOS • RADIO SHACK TRS80 • or any system reading CP/M 8" Single or Double Density.

For MS/DOS Operating System $259
IBM/PC • WANG

For TRS/DOS Operating System
Radio Shack TRS80 Mod I, III $149
Radio Shack TRS80 Mod II, 16 $189

For ATARI Microsoft Basic $189

For OASIS Operating System $349
ALTOS • COMPUCORP • CROMEMCO • DELTA PROD • DIGITAL GROUP • DIGITAL MICROSYSTEMS • DYNABYTE • GODBOUT • IBC INDEX • INTERSYSTEMS • NORTH STAR • ONYX • SD SYSTEMS • TRS80 II • VECTOR GRAPHIC • VORIMEX

Send check or money order (Florida residents add 5% tax) to ICR-FutureSoft, Box 1446-PD, Orange Park, FL 32073 or if you have Visa or Mastercard, Call **Free** 24 hours daily, seven days a week...

1-800-824-7888 ask for Operator #120
California 1-800-852-7777 Operator #120
Hawaii/Alaska 1-800-824-7919 Op #120

Operators cannot give technical help, accept orders only. Technical support call 1-904-269-1918.

Software Dealers can handle this software. Contact ICR-FutureSoft Customer Service at 1-904-269-1918 or write.

colors on the screen change to match the new palette.

The format for the Color statement in medium-resolution color graphics is:

COLOR [*background*] [,[*palette*]]
where:

background :	a numeric expression between 0 and 15.
palette :	a numeric expression equal to 0 or 1.

Therefore, the statement Color 0,1 will immediately color the background black, including the border screen, and immediately change green, red, and brown to cyan, magenta, and white. Only the colors of one palette may appear on the screen at one time in addition to the background color.

PColor demonstrates all the possible combinations of colors on the IBM PC. It begins in Text mode, width 40, with a menu at the top of the screen. The rest of the screen is filled with blocks of each background color embedded with characters in each foreground color. The characters in each block indicate the foreground and background color values used to obtain that block's particular combination of colors. The program then cycles through each border color, printing the value used to obtain the border color on line 25 of the monitor. To pause in this cycle for a still display, press [F3]; then press [F4] to resume cycling of the border colors. [F8] displays in width 80, while [F7] returns the display to width 40. In width 40, you may invert the matrix of foreground/background color blocks with [F5] and [F6]. In either width you may display blinking characters with [F10] or normal (not blinking) characters with [F9].

EACH graphics statement can put one of four colors on the screen by specifying the color number.

Pressing [F1] changes the screen to medium-resolution graphics and draws large boxes of each color. Here, too, the program cycles through each background color. To change the palette in this mode, press [F2]. As in the other mode, the values of the background color and of the palette are displayed at the bottom of the screen. The changing background may also be paused and resumed by [F3] and [F4].

While *PColor* can be especially helpful to those who have color graphics printers, the expense of such hardware makes it a rarity among PC users. This program is not for everyone; but for those who use a great deal of color graphics or who are planning to buy a color monitor, it can be a big help. */PC*



"I WRAPPED IT UP LAST WEEK, HENRY. HOW'S YOUR END COMING?"

Updating our club's membership list was a cinch, thanks to TCI Software's new MAILTRAK.™

Mailtrak™ List Management System

Customers, prospects, clubs, sales lists, membership organizations, fraternities, neighbors, alumni, volunteers. . . . Whatever your list, it can be managed with TCI's MAILTRAK. Complete name and address information includes first and last name, two address lines plus city, state, and nine digit zip. Full tracking and selection capability is enhanced by the availability of two Phone numbers, five Mail codes, plus four Activity codes with associated dates. On-screen editing and updating is learned in seconds. Output includes telephone directories, master list, labels (user selected format up to 4 across and any depth), and output files for word-processing programs or your Basic programs. Sort on any five fields in the data record and select on any or all fields of information. Stores up to 1,200 records on a single-sided diskette or 2,400 on a double-sided diskette. Access your records by number or last name. Coming soon . . . a MAILTRAK form letter program! Also ask about the 128K version for hard disk systems.

(Minimum system 64K, MS DOS, Printer and display -40 or 80 character)

$65 includes diskette, manual and shipping $15 for manual only (refundable on diskette purchase)

VISA and MasterCard accepted.

Also ask about the new **Agenda™** Automated Calendar & Expense System from TCI

TCI Software

Call or write today

6107 West Mill Road, Flourtown, PA 19031 215-836-1406 (24 hours)

Introducing low cost, IBM compatible disk drives

Up to 2.6 megabytes of IBM formatted storage

Low cost internal/external drives
Plug the INTERFACE IBM compatible disk drives into your IBM cabinet or add on to your existing drive configuration. INTERFACE drives can be used externally or internally, in a variety of configurations. To give you increased storage capacity up to 2.6 megabytes.

Internal Drives

- *Single sided drive with 168K bytes IBM format $215
- *Double sided drive with 325K bytes IBM format $335
- **Quad drive with 650K bytes IBM format $450

External Drives: (Includes drive, power supply, cabinet and cable)

- *Single sided drive with 168K bytes IBM format $325 (Maximum two drives externally)
- *Double sided drive with 325K bytes IBM format $445 (Maximum two drives externally)
- **Quad drive with 650K bytes IBM format $560 (Maximum two drives externally)
- Quad software diskette $95

*Compatible with 1.1 DOS
**Requires Quad software diskette



Up to four drives
You can have as many as four drives operating with your IBM personal computer. Giving you an incredible 2.6 megabytes of formatted storage.

Eight color cabinets to choose from
INTERFACE gives you a choice of color coordinated cabinets to choose from for external drives. Colors include standard off-white, an IBM-like blue, lime green, dark green, bright orange, brilliant yellow, black, and chrome.

Unconditional warranty and service
90-day unconditional warranty plus service center for out-of-warranty service. For more information about the IBM compatible disk drives, call or write today:

I² INTERFACE, INC.
7630 Alabama Ave.
Canoga Park, CA 91304
(213) 341-7914

IBM is a registered trademark of IBM Corporation.
MasterCard, VISA and COD orders accepted.
Dealer and quantity discounts available upon request.

FABS/PC™ THE KEY TO HIGH SPEED DATA ACCESS:

PRICE $150.00

***** MAINTENANCE FREE BTREE STRUCTURE *****

For DOS and BASIC/BASIC COMPILER/PASCAL on the IBM PERSONAL COMPUTER

AUTOSORT

is an 8088 assembly language sort/merge/select subroutine.

Can be used as a Stand-Alone or as a subroutine for BASIC, BASIC COMPILER or PASCAL.

Sorts on 10 keys; Compares up to 4 independent select keys; Rapid with large data files; Has subroutine to merge two files into one. Sorts files as large as DOS & workspace allows; Has prompted disk change capability.

Output file can be full records, rec pointer & sort keys, or rec pointer only.

Sort parameters defined in parameter file or dynamically in a command string.

PRICE . . . $150

Features:

- **Versatile, fast, easy, to use assembly lang. multi-path BTREE**
- **Loads as resident to DOS for easy, continuous access by BASIC**
- **Random search time approx. 1 sec.; sequential approx. ¼ sec.**
- **Duplicate keys permitted; search returns the first duplicate**
- **Insert/Delete multiple keys with a single command string**
- **Deleted data records automatically reclaimed by later inserts**
- **Generic search returns the first occurrence of a partial key**
- **FABS directs all access to the data file with record pointers**
- **Allows ASCII keys (► 50 bytes), integer keys use only 2 bytes**
- **Up to 32767 records (limited by BASIC, FABS supports 65535)**
- **Excellent error handling; errors/warnings returned to basic**

COMMANDS:

Create Key File
Open Key File
Close Key File
Search For Key
First, Last,
Next, Previous
Generic Search
Insert Key
Delete Key
Replace Key
of Open Deletes
of Data Records
of Primary Keys
Max Key Length

IBM is a registered trademark of International Business Machines Corporation

FABS/PC is a trademark of Computer Control Systems

COMPUTER CONTROL SYSTEMS, INC.
298 21st Terrace S.E., Suite 100, Largo, FL 33541 (813) 586-1886

IBM PC Users

We can save you money if you give us a chance.

IBM PC with 64 K Memory, Disk Drive Controller, Color Card
2 Drives and a Green 12" Monitor **$2999**

MAYNARD ELECTRONIC BOARDS

Floppy Drive Controller	**$189**
Controller with One Parallel Interface	**$229**
Controller with One Serial Interface	**$249**
Board with One Parallel and Two Serial Interface (No Controller)	**$249**
Big Blue Card (Multifunction Card) by QCS	**$469**
Single Side, Single Density Drive 5¼"	**$195**
Double Side, Double Density Drive 5¼"	**$249**
Tandon TM100-1 5¼" SS SD Drive 250 KB Capacity	**$208**
Tandon TM100-2 5¼" DS DD Drive 500 KB Capacity	**$259**
Tandon TM100-4 5¼" 96 TPI Drive IMB Capacity	**$379**
Hercules Color Graphic Board	**$499**

MEMORY: 128K — **$289** / 256K — **$499** / 512K — **$799**

AST Research Combo Card 256 K Parallel Serial Port, Battery Backup **$599**

MONITORS & PRINTERS

BMC 12" Green Screen	**$95**
BMC 12" Green Screen High Res.	**$149**
NEC 12" Green Screen	**$169**
BMC 13" Color Monitor	**$289**
C. ITOH Prowriter Parallel Printer	**$499**
C. ITOH Prowriter Serial Printer	**$599**
C. ITOH 15" Carriage Prowriter II (P) Printer	**$699**
C. ITOH 15" Carriage Prowriter II (S) Printer	**$799**
F-10 Daisywheel Printer	**$1450**

EPSON

MX80	**$469**	Okidata 84A	**$1099**
MX80 FT	**$569**	Brother HR 1	**$799**
MX100	**$769**	Smith Corona	**$599**

Soon Opening Retail Stores Throughout U.S.A.
FRANCHISE INQUIRIES WELCOME

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ALL FLOPPIES REPAIRED QUICKLY AT LOW COST

CompuShack
Computers - Video Games

2630-H Walnut Avenue
Tustin, CA 92680

Call: (714) 730-7207
Telex: 18-3511 Answer Back CSMA

fms II

NOW AVAILABLE FOR PC USERS!!

Get FMS II (Financial Management System II). An easy-to-use accounting system for small business and home accounting with Checkwriter for only

$89.95!

Be able to enter an entire month's checking, charge card, and cash accounts in just a few minutes using your own personalized macro list. INSTANT ERROR CORRECTION. Audit all files by code and month with year-to-date totals. PERFECT FOR TAX ACCOUNTING. FMS II includes the following features:

Account Manager A self-prompting error-avoiding entry system which includes disk files, balance, reconcile, edit, and sort. Maintain multiple checking, charge card, cash, and savings accounts.

Budget Manager Plan, review, and balance your budget. Print reports for any 1 to 12 month period with summations.

System Utility Enables user to define item and tax code macros, up to 100 each. Configure system to match almost any printer.

Account Auditor Totals all files by tax code for any 1 to 12 month period with year-to-date totals. Perfect for your Tax Accountant.

Search Records Provides for searches of all files with specific and expanded searches using the Macro lists.

Checkwriter Print your checks directly from FMS II files using the standard format on your own Custom Format.

FMS II requires 64K of RAM and Disk. Single or Dual Disk compatible. (Printer Optional)

COMPUTERIZED MANAGEMENT SYSTEMS

1039 Cadiz Drive • Simi, California 93065 • (805) 526-0151

Check, VISA or MasterCard accepted. Calif. residents add 6% sales tax. Dealer Inquiries Invited.

WHAT'S ECC?

ECC (Error Correction Code) is a polynomial derivative which is used to detect and correct errors. In simpler terms, this means that the computer will detect and automatically correct data errors sometimes generated spuriously in the equipment.

VR Data's HARD DISK III has this feature. If your system will abend or die during a data error or if you must always have the correct data for your functions, ECC is a necessity. This feature has filtered down from the larger computer systems and is now used by manufacturers of superior micro computer products.

Imagine a 5 meg Winchester Hard Disk with the following features:



ALL FOR $1899. Complete

- ECC—onboard buffer
- FCC approval—Heavy Duty Power Supply
- Automatic power on with system
- Heavy duty linear power supply
- Gold plated contact on all connectors
- Heavy gauge aluminum chassis
- 115/230 VAC 60/50 HZ Standard
- State-of-the-art controller
- 2 pass forced air cooling system

ONLY FROM VR data

777 Henderson Boulevard N-6 Folcroft, PA 19032
(215) 461-5300 (800) 345-8102

Interfaces to: Radio Shack TRS 80 Model I • Radio Shack TRS 80 Model III • IBM Personal Computer • Others to be announced

A Cigar-Factory PC And The VisiCalc Soccer Standings

Rick Hiten has a business in a renovated cigar factory, and Bob Warden keeps tabs on his son's soccer league with VisiCalc.

Early last year Rick Hiten established his own consulting business in Owensboro, Kentucky. As owner and primary staff member of Hiten & Associates, he provides community planning and business development assistance to public agencies and private clients. Since last February he has used an IBM PC to assist him in all of these projects.

In these respects Hiten's situation is not particularly unusual: Many people who have business experience start their own consulting firms, and a number of them have added PCs to their tool chests. Yet few are likely to have installed their PCs in a location as unique as Hiten's—a converted cigar factory that was once the largest wooden building in the world.

Hiten & Associates was the first tenant in the Cigar Factory Mall, a renovated building that won a place in the *Guinness Book of World Records*. At the time of its construction in 1892 it was the largest wooden building anywhere. Its dimensions were massive, considering the era and the materials used: 81 feet high (seven stories), 60 feet wide, and 300 feet long.

For more than 60 years this huge structure served as one of American Tobacco Company's warehouses. In 1956 the company converted the warehouse into a cigar factory by demolishing all but the bottom two stories and replacing many of the walls with brick. At full production capacity the factory's 450 employees could turn out 1.2 million Roi-Tan cigars; on an average day they made 800,000 stogies. By the 1970s, however, the demand for cigars had diminished considerably, and in 1978 the factory closed.

ON AN average day they made 800,000 stogies.



Rick Hiten in his office. (Inset top) The original tobacco warehouse, built in 1892 in Owensboro, Kentucky. (Inset bottom) The entrance to the newly renovated Cigar Factory Mall.

From Stogies to Stores

Three years and $2 million later the old tobacco building was given new life by Owensboro developer Robert Moorman. As a community planner for a local government agency, Rick Hiten learned about the renovation project and contacted Moorman, who suggested that Hiten become an independent consultant for the project. Hiten accepted and also became the first occupant of the mall, which now houses a number of professional offices, restaurants, and retail shops.

Soon after going into business for himself, Hiten realized that he needed a word processing system to keep up with the paperwork. "We write quite a few reports around here," he notes. "I looked at several word processors, but people told me that for my business I needed a computer to do financial planning and other things." He hadn't decided which computer to buy when IBM announced the PC. Hiten made the 30-mile trip to the nearest dealer (a ComputerLand in Evansville, Indiana) to see the new computer, and he liked what he saw. Before purchasing his PC, he returned to Evansville several more times to ask questions and try out the system. He

IMAGINE a program that saves you hundreds of keystrokes per hour ... lets you create forms in minutes ... runs long sequences of commands on automatic pilot ... customizes your keyboard for any application ... makes macros in any language or application ... and is on all the time and can be used within ANY program.

IMAGINE a program that does all this and more for only $50.00!

Introducing

PROKEY

Your full-time, on-line keyboard assistant

Running a computer requires a lot of tedious keyboard input. You find yourself typing the same things over and over: spreadsheet headings, the long series of keystrokes necessary to move a block of text or update your database, the sequence of commands to edit, compile, link and debug your programs. Wouldn't you like to type something one last time – and from then on have the computer retype it at the touch of a single key?

Now you can – with PROKEY! And PROKEY types faster than any fingers and never makes a mistake! With PROKEY you can memorize over 90 strings while you work and have immediate access to them. And for later use you can save strings in editable files. So you can create reuseable "vocabularies" for all your projects and modify them at any time. The possibilities are limitless.

PROKEY requires MS-DOS and a 64K* system with one disk drive.

*Min. 96K with WordStar

Start saving time now – order PROKEY today.

MC/VISA
TOLL FREE ORDER LINE
(800) 227-3800
(800) 792-0990 in Calif.
Please ask for extension 217.

Or send $50.00 to
PROSOFT
PO Box 5850
Seattle, WA 98105
(206) 632-3603

(Washington residents please add 6.5% sales tax.)

GAME I/O ADAPTER+

Game I/O Adapter

- Interfaces With Popular Paddle Systems
- Interfaces With Graphics Systems
- Allows X, Y Control
- Analog Control Via 16 Pin Connector

Access-Master

A Disk Accessor Used Within Any Basic Program

- Interfaces With Screen-Master
- Utilizes The Latest S.K.R.A.M.* Techniques
- Sequential Processing Of Random Access Files In Key Order
- Keyed Access For Direct Record Retrieval
- Random Retrieval By Record Number
- Access Files With Keys Up To 30 Bytes In Length
- Multiple Methods Of Record Access (5 Types)
- Interfaces With Existing Basic Programs
- Eliminates Hours Of Development Time

Screen-Master

Generates Screen Input Format

- Defines Defaults
- Table Searching (Handling)
- Date Checking (Leap Year Included)
- Special Handling Routines Available For Each Field Through Gosubs
- General Title Formatting
- Utilizes Special Function Keys
- Define Where Each Field Input Goes Into The Record
- Key Length (Maximum 30 Characters)
- Program Various Sound Responses

SOFTWARE MASTERS
6704 Hoover Road, Indianapolis, IN 46260
(317) 259 7892

Dealer Inquiries Welcome

License Agreements Available

found a willing staff that knew about microcomputers but was not yet familiar with the PC.

Learning in Tandem

"Most of the local ComputerLand people got into computers a few years ago and already had their own systems, so they didn't know that much about the PC," Hiten points out. "So we worked through the thing together; we dragged out the technical manual, *EasyWriter*, *VisiCalc*, and everything. We all learned at the same time."

I'D NEVER worked with a word processor before, so I was amazed at what it could do.

By the time he took his PC home, Hiten knew many of the computer's basic operations and was well along in learning both *EasyWriter* and *VisiCalc*. But his considerable practice provided little preparation for the infant mortality that his computer suffered the day after he got it. "I brought it home, plugged it in, booted up *EasyWriter*, started messing around, and all of a sudden the system went down; the screen just went blank. I didn't know what went wrong. I thought, 'Oh my God, I've done something to it already.' I'd had the machine for only 24 hours."

Of course, Hiten's short-lived experimentation with *EasyWriter* hadn't caused the problem, but he confirmed that fact after several hours of troubleshooting by the ComputerLand staff. The malfunction turned out to be in the disk drive controller; after a new controller was installed, the machine worked perfectly. In the 9 months since, Hiten's PC has had no further problems.

"I am pleased with the computer's performance," Hiten affirms, "and very satisfied with the help and service I've received from the ComputerLand staff in Evansville." When he ordered a typewriter interface to use with an IBM electronic typewriter in his office and subsequently discovered that it wouldn't print justified text or perform other printing enhancements, the store allowed him to return the device. (He has since purchased an Epson MX-100 printer.) The ComputerLand salespeople also gave Hiten the names of other PC owners in his area, one of whom has helped him with technical questions that no one else could answer.

Hiten wasn't as satisfied with the original version of *EasyWriter*, but at first he was unaware of some of the bugs in the program. "I guess it's like the difference between a good bottle of wine and a bad bottle of wine," he muses. "If you've never tasted wine before, how do you know whether one is good or bad? I'd never worked with a word processor before, so I was amazed at what it could do. It was a while before I realized that it wasn't doing things it was supposed to do."

In his work Hiten relies on the word processor and spreadsheet programs. He has also produced accounting and communications software. His system hardware includes 64K, two single-sided disk drives, monochrome display, a NEC black and white monitor that he uses in combination with the color/graphics card, and the asynchronous communications card. Hiten does not use both monitors at once; he changes the DIP switches inside the computer when he wants to use the graphics card and monitor. He also has the D.C. Hayes Smartmodem.

On-Line Research

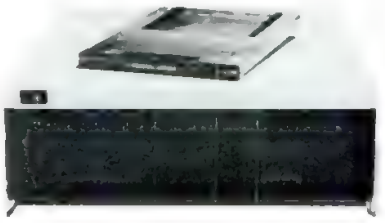
Hiten's PC system is a business investment. It makes his work more efficient by giving him the capacity to do data base research. The business and planning reports he develops for clients generally include background information and data on a client's specific industry—research he used to do by telephone or at the library. Now he is able to connect to The Source and the extensive data bases of Dialog and gather detailed information that can be integrated into his reports and financial analyses.

Hiten's computer-aided research supplies information instantly and easily. "One client wanted to know if it was feasible to open a store, considering today's economic conditions. I put together a marketing strategy, business plan, and my recommendations for the project. I used The Source to get the economic and marketing background. In the past, I'd call up librar-

10 MByte Floppy

Resolves Storage Backup Dilemma

Now there is a proven, effective disk storage subsystem, the BC-20, for the IBM Personal Computer and S-100 based microcomputer systems.



The **BC-20** is a 20 Megabyte high-performance disk storage subsystem, consisting of two 10 Megabyte removable cartridges. This subsystem is a direct access storage device that uses flexible media. The media, a 10 Megabyte cartridge, is an efficient, durable polycarbonate enclosure containing a single flexible disk, internally latched to prevent user contact. This cartridge is easy to use, and can be safely transported in its own packaging.

The BC-20 is the simple solution to your disk storage backup dilemma

Write or call for more information.

BC SYSTEMS INC.
1016 East 31st Street
LaGrange Park, Illinois 60525
(312) 579-0672

Please send me more information on the BC-20 Disk Storage Subsystem.

Name _____

Address _____

_____

Telephone _____

BC SYSTEMS INC.
1016 East 31st Street
LaGrange Park, Illinois 60525
(312) 579-0672

ies and ask for that information; with The Source and Dialog I can take it right off the screen."

On-Screen Training

Hiten has also discovered that many of his clients are fascinated by the PC. When clients come to his office, he often consults their records while they look on. "I've got their records on a disk," he notes. "I pop the information up on the screen and they are amazed."

Some clients want to try the computer for themselves. For a first exposure Hiten puts in a game disk. "The games give an introduction to the computer that seems friendly," he reports. "Maybe they've always wanted to slay dragons or solve a mystery or something. Playing a game makes it easier for them to sit down and do some work the next time." He has also used games to introduce the PC to office staffers to help them get over initial fears of the computer and make learning *EasyWriter* easier and faster.

Rick Hiten says that he went through his own on-screen training to learn the programs and make the PC a useful business tool. This process was a bit more complex and time-consuming than he had expected, and he suggests that many people may be misled by the stereotypical view that using a computer is effortless. "I guess I believed that all you had to do was buy the computer and it would work by itself. That's not the way it happens."



Photograph: Linda V. Williams

Bob Warden on the soccer field.

VisiCalc Meets Soccer

Bob Warden is an engineer who has access to a PC at work. Like a growing number of other people in business and technical professions, he also has a PC at home. Warden often brings projects home. But Warden's life is not all work. A resident of Berkeley, California, he is very active in the East Bay Youth Soccer League. His 13-year-old son, Bruce, plays on one of the league's 85 teams. In addition to acting as a referee for matches, Warden serves on the three-member board that directs the league's activities.

One of his duties is to set up a schedule for two divisions (27 teams) in the league and to keep track of their playing records and league rankings. That's where the PC and *VisiCalc* come in. This year Warden created a schedule and scorekeeping system with the spreadsheet program; his model accommodates all team scores and allows him to calculate each team's division ranking within a few seconds.

Convenient Calculations

"*VisiCalc* is a natural for such a job," Warden reports. "A soccer schedule comes out in a tabular format, and *VisiCalc* gives me a convenient way of handling it. I get things justified and formatted right or left, depending on how I want them, without any effort."

Warden devised the schedule to keep track of scores and to calculate team rankings, but first he made up the list of matches by hand. "I had previously worked out the round robin that goes with a certain size division, say an eight-team division, and I put it into the *VisiCalc* schedule. When the scores come along, I put them in the PC underneath the appropriate teams, and the computer calculates the number of points each team gets. They get two points for a win, one point for a tie, zero for a loss. Then I keep track of the points to find out who is the division winner. I can just dump it to the printer when we have a league meeting or a meeting of the coaches. There's no effort in staying caught up."

Warden got the idea to use *VisiCalc* for computerizing the schedule from seeing his colleagues do similar calculations at work. He was familiar with the effort involved in scheduling and scorekeeping because he had previously served as match secretary. "Combining the two was logical," Warden points out. "Having seen what could be done with *VisiCalc*, I knew that there was a good fit and that it would be useful and fun for the user."

Besides saving time for Warden, the

INVENTORY MANAGERS:

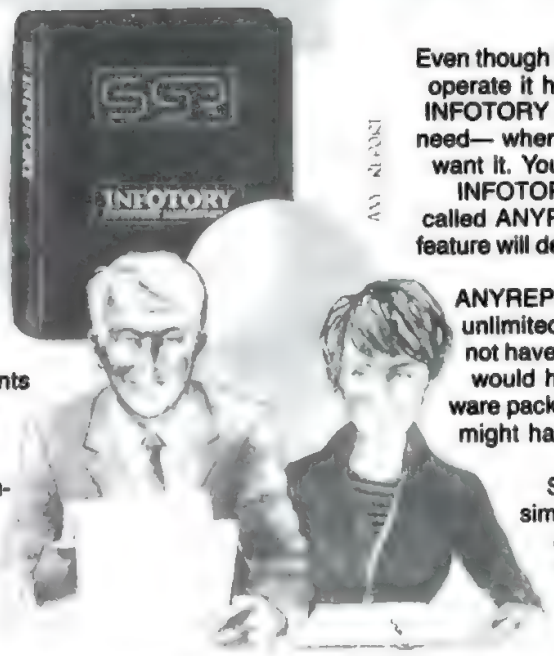
WHEN YOU BUY INFOTORY™... YOU'RE BUYING THE BEST!

SSR Corporation has been providing business solutions for all makes and sizes of computers for over twelve years. They know your needs and how to satisfy them.

They know what management wants in an inventory system...less time learning and more time producing.

Last year SSR introduced INFOTORY...the ultimate solution to inventory management problems.

With INFOTORY *anyone* in the office can learn the system—in less than four hours...because it's so easy to use.



Even though the system is easy to learn and operate it has great flexibility and power. INFOTORY promises the information you need— when you need it *and* the way you want it. You design your own report with INFOTORY'S unique reporting feature called ANYREPORT™. This easy to learn feature will deliver customized reports within minutes.

ANYREPORT's capabilities are almost unlimited. Other inventory systems do not have an ANYREPORT feature. You would have to buy an additional software package to get this extra...and you might have to take a computer course to learn how to use it.

So, for the best, most flexible, simple-to-learn inventory package available...stop in at your nearest IBM PC Dealer, or give SSR a call for more information.

SSR Corporation, 1600 Lyell Avenue, Rochester, New York Telephone 716-254-3200

COMPUTERWISE INC.

PROUDLY PRESENTS

IBM PC SOFTWARE

COMPUTERIZED EDUCATIONAL PACKAGES — FINANCIAL SOFTWARE PACKAGES

ELEMENTARY
Arithmetic
Social Studies
English
Science
Music

SECONDARY
Mathematics
Latin
Chemistry
English
Vocabulary
Biology
History

SMART MOUSE
Arithmetic
English
Science
Social Studies
17.95 ea.

COLLEGE LEVEL COURSES **75.95 ea.**
MATHEMATICS/STATISTICS ENGINEERING ENGLISH
ACCOUNTING/BUSINESS CHEMISTRY VOCABULARY

VCR VIDEO-LEARNING TAPES **59.95 ea.**
(Available in VHS & BETA Format)
DOS Operating System Graphics
BASIC for Kids Advanced BASIC
BASIC for Novice Game Programming
Intro to Computers Data Files

ALL PROGRAMS ALSO AVAILABLE for APPLE and TRS-80

BUDGET MANAGER	$30.00
BUSINESS MANAGER	$30.00
ACCOUNTS RECEIVABLE	$75.00
LABEL/SORTER	$50.00
TAX MANAGER	$30.00
WORD PROCESSOR	$60.00

GAMES GAMES GAMES GAMES **18.95 ea.**
SUPER NOVA MISSILE JALOPY DEATH RACE
BUGWAMMER 3-D MAZE GLOG BOWLING

COMPUTERS FOR KIDS A LAB BOOK **7.95 ea.**

COMPUTER LITERACY COURSE **995.00 ea.**

Send check or money order to
COMPUTERWISE INC.
Box 447 East Valley Road
Dunlap, TN 37327

What you see . . . is what you print with PrtSc (print screen)

Enhanced screen printing for the IBM Personal Computer at the touch of a button!



- ☐ Print *all* 256 text characters!
- ☐ Print medium and high resolution graphics
- ☐ Save screen images on diskette
- ☐ Use with Monochrome and Color adapters
- ☐ Documented programmers' interface

Diskette and manual: $65 postpaid VISA/MC welcome

RADIO TECHNOLOGY
8 N. Main St., Suite 111, West Hartford, CT 06107
(203) 232-9974

Write for special prices on EPSON printers and AMDEK RGB video monitors.

IBM-PC goes to WALL ST.

with

STOCKCHART-II™

A SOFTWARE PACKAGE WHICH GENERATES ON-BALANCE-VOLUME GRAPHS, PRICE-CHARTS, MOVING AVERAGES, AND MORE. . .*
*INCLUDING COMMUNICATION SOFTWARE FOR RETRIEVING STOCK QUOTES FROM THE DOW JONES NEWS RETRIEVAL** SYSTEM AND COMPUSERVE.*

IBM

MICRO-INVESTMENT SOFTWARE
9621 BOWIE WAY
STOCKTON, CA 95209

STOCKCHART II is a trademark of Micro-Investment Software
IBM is a registered trademark of International Business Machines Corporation
* ON BALANCE-VOLUME is a trademark of Granville's Market Letter
** Trademark of DOW JONES & CO., INC

I am very interested in STOCKCHART-II. Please send more information.

Company _____

Name _____

Address _____

City _____ *State* _____ *Zip Code* _____

VisiCalc soccer schedule assures a degree of accuracy that was not always possible with handwritten scores. "One of the really great advantages is that it's all legible and easy to change," he notes. "It's hard to depend on someone's printing; if you get it all typed up, there's no problem."

Warden notes one drawback in the way *VisiCalc* handles calculations. "One wishes that *VisiCalc* had letter variables. The way it is now, I have to say that Team 3 is playing Team 7 and then Team 1. It would be nice to have them playing the Grizzlies and the Avengers. It would add a touch of reality. I could do that now by loading the DIF files into a BASIC program and converting the number into the equivalent name of the team, but that's extra work."

Added Features

Despite this shortcoming, Warden continues to add features to his scorekeeping system. "I'll do other things with the schedule now that I have it. In addition to scores, I'll put in the names of referees at various games so we can keep track of teams that don't provide referees when they should. We can also keep track of disciplinary measures that referees take. There are various degrees of discipline a referee can administer on the field, and when he does, he reports it. If certain teams are creating problems, we can identify them early on."

Warden predicts that at least one other match secretary will come to his home to use the *VisiCalc* system. He has also made a master schedule, printed copies, and distributed them to other league officials. He plans to take a current printout to monthly league meetings, and he may make printouts every week to tell coaches and players how their teams stand in the division.

At the end of the season Bob Warden's *VisiCalc* soccer schedule will get a bigger test. He will use it to record scores and figure the rankings for a tournament that will feature 120 soccer teams. The time-saving and instant-ranking features of his program will undoubtedly come in handy. ***/PC***

Do you know someone who should be featured in PC Profiles? *Do you use a PC for something unusual, outrageous, or revolutionary? Let us hear about it. Send your suggestions to* PC Profiles, *1528 Irving St., San Francisco, CA 94122.*

The Norton Utilities™ – DOS Supplement

POWER TOOLS™ for the IBM/PC

14 utilities to enhance IBM/PC – DOS



The essential utilities:

DiskLook – displays everything on diskettes
UnErase – recovers lost files

The advanced utilities:

SecMod – changes any diskette sector
FileHide – controls hidden files

The extra utilities:

TimeMark, Clear, DiskOpt, FileFix
Print, Reverse, Beep, ScrAtr, . . . and more!

Available from computer stores or for $80 from
Peter Norton 1716 Main St.#D, Venice, CA 90291

For the best bargain, buy the complete Norton Utilities from your dealer, or directly from me, for $80. But you can also buy the four main utilities, individually:

$20 for DiskLook, the complete diskette displayer
$20 for UnErase, the file recoverer
$20 for SecMod, the diskette modifier
$10 for FileHide, the hidden file controller

for all mail orders add $5 shipping and handling; in California add sales tax

Hundreds of customers agree: The Quality Leader in Utilities for the IBM/PC

THE PERSONAL INVESTOR™



Successful investors spend hours scanning stacks of publications looking for information on their investment interests.

They keep up to the minute and accurate records, analyze their holdings, and keep a sharp eye on stock prices and volumes. *The Personal Investor* software does the time consuming work, while giving you the facts you need to make wise investment decisions.

The *News/Terminal* automatically connects your computer with the *Dow Jones News/Retrieval Service* or manually to other terminal services to collect financial news and reports.

The *Stock Portfolio* records and reports on stock purchases, commissions, dividends and splits. It also keeps a sales transaction ledger that helps you with your taxes and shows actual profits and losses (after commissions). The portfolio can be manually updated or automatically updated by the *Dow Jones* service.

Quotations on the stocks in your portfolio and any stocks you add to that list are collected each time the portfolio is updated by the *Dow Jones* service. These quotes are stored and can be viewed on the monitor screen or printed.

***The Personal Investor* includes one password to *Dow Jones News/Retrieval Service* and one hour free usage.**

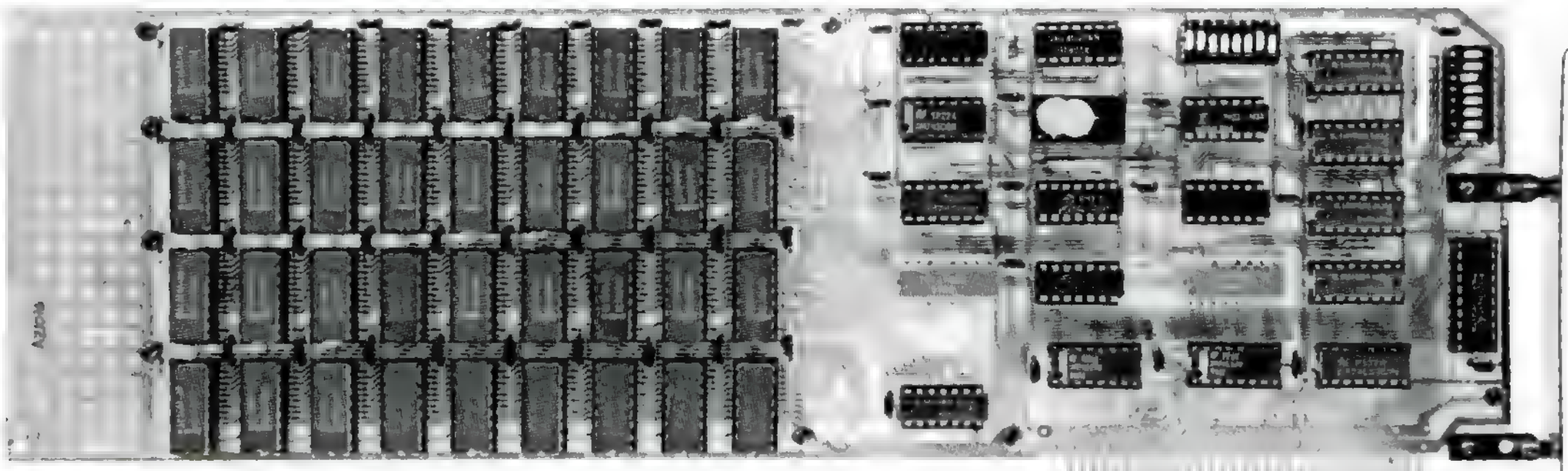
The IBM PC version requires 128K and one disk drive ($145.00). The Apple II version requires 48K and one or two drives ($145.00). *Dow Jones News/Retrieval Service is a trademark of Dow Jones and Company Inc. The Personal Investor* can be purchased from many Computerland and other retail computer stores. For more information or the location of your nearest dealer call or write:

PBL Corporation
PO Box 559
Wayzata MN 55391
612 473-3769

PBL
The Investment Software Company

Enjoy the RAMifications of Pure Data.

- ☐ Configured as 4 banks of 64K bytes each
- ☐ Each 64K bank is individually addressable and locatable on 64K byte boundaries
- ☐ On-board parity generation and checking
- ☐ Refresh is synchronized and Planar Memory insuring present and future compatibility
- ☐ Full speed, no wait-states
- ☐ All integrated circuits and socketed
- ☐ Intel 200 ns ceramic DRams are used throughout
- ☐ Active delay line incorporated for precise refresh
- ☐ Comprehensive installation and operation manual provided
- ☐ Source listing for exhaustive memory testing included
- ☐ Extensive dynamic testing during burn-in. Available in 128K (PDI128), 192K (PDI192) and 256K (PDI256)
- ☐ Field expandable up to 256K bytes
- ☐ Guaranteed for 1 full year, same-day service
- ☐ Nickel-plated bracket and card guide included



☐ **YES** I would like to order the Pure Data memory expansion RAM card for my IBM PERSONAL COMPUTER Please send ___ cards @ $529.00 US each. Total $ _____

Please add $15 for postage & handling (insurance) Any unused portion will be refunded.

☐ **YES** I am interested in the Pure Data dual serial channel and real time clock card for my IBM PC.

☐ **YES** I would like more information on the Pure Data RAM card.

☐ **YES** I am interested in the Pure Data direct connect 300-1200 baud intelligent modem for my IBM PC

☐ **YES** I am interested in the Pure Data Intelligent Serial Communication Card for my IBM PC.

☐ Certified cheque or money order is enclosed.

☐ Visa ☐ American Express

Account # _____ Expiry Date __/__/__

Authorized signature _____

PLEASE RUSH MY CARD(S) TO:

Name _____

Street _____

City _____

Province/State _____ Code _____

MAIL TODAY TO:
Pure Data Ltd.
950 Denison St., Unit 17,
Markham, Ontario, Canada L3R 3K5

VISA AMERICAN EXPRESS

256K Expansion Memory for the IBM Personal Computer for only $529.00 U.S.*

Order your PDI256 today and enjoy the RAMifications!

*Inquire for Canadian pricing.

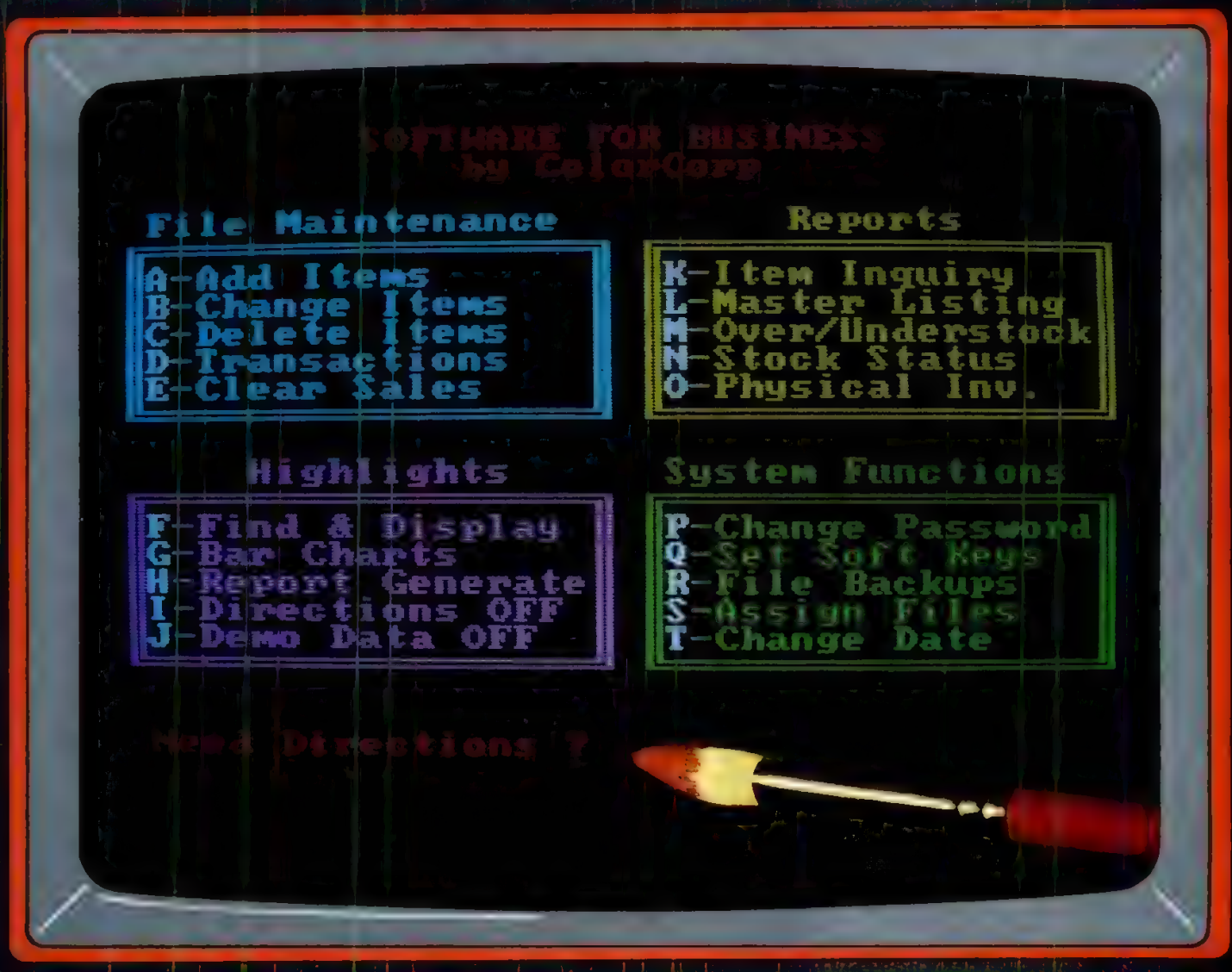
Designed and Manufactured by

PURE DATA LTD

Dealer inquiries welcome.

950 Denison St., Unit 17,
Markham, Ont.
Canada, L3R 3K5
(416) 498-1616

Add color. simple.



Add color to your business with ColorBIZ

Introducing ColorBIZ™, the color software inventory program developed exclusively for the IBM Personal Computer®. Simple; because it works, reliable because all programs are designed with extensive error checking. Each software package includes color coded manual, program, data and backup diskettes...just in case. ColorBIZ™ has been developed for businesses that expect performance and flexibility, and can be applied to satisfy even the most unique business concern. Standard features in the ColorBIZ™ package include:

- User's Manual color coded to business application
- Browse feature for rapid & selective scanning
- DataBase retrieval capability
- Charts & graphs to illustrate performance
- Password security to restrict access to sensitive data
- User selectable report generation
- Single key response for improved operation
- Reorder information automatically identified
- User definable soft keys for automatic input
- Provides usage & margin analysis by month & year-to-date
- Defined reports include:
  - On Order/Order Recommendation
  - Master Parts Listing
  - Inventory Analysis
  - Physical Inventory
  - Stock Status
- OnLine directions

Available now or write for brochure & dealer nearest you

Major credit card orders accepted by phone

SHIP TO
Name
Company name
Address
Phone

○ Enclosed $498 ○ Enclosed $100 send C O D ○ Please send more information

ColorCorp®

208 North Berkshire Bloomfield Hills Michigan 48103 USA
313 330 9365 ○ 1 800 521 0201

IBM Personal Computer® is a registered trademark of IBM Corp.

Give Uncle Sam a run for your money.



Introducing TaxCut: The first total income tax system for your personal computer.

Now you can fight back.

With an IBM Personal Computer... and this sophisticated income tax system... you can tackle the Feds head-on.

TaxCut was designed by tax experts. It gives you incredible tax planning and computational powers by allowing you to access and update the information all year long.

You can calculate. Income average. Analyze.

Even *project*. (Here's where it gets exciting... and profitable.)

You can test hundreds of different tax planning alternatives. "How will an IRA affect my taxes?" "What are the tax benefits of buying more business equipment?" "Should I sell my house?"

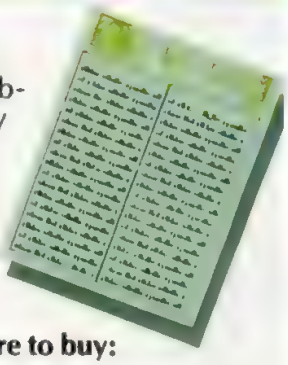
It's an invaluable tax tool. In fact, after all your data has been entered, it will even fill out the return for you. And it's capable of handling over 30 common forms.

The program has all the latest tax laws incorporated and can be updated yearly.

You get more than the Software.

Included in the cost is a year's subscription to TaxTips. This monthly newsletter will keep you current with all the latest tax planning information.

The cost is only $250, so order TaxCut now. Uncle Sam approves... it's deductible.



To order or for information where to buy:

Call toll free: 1-800-251-2320
In Arizona: 1-800-972-7479

Write: United Micro Systems, Inc.
P.O. Box 3035
100 N. Stone #1100
Tucson, AZ 85702

Visa/Mastercharge accepted

TAXCUT™

TaxCut is a trademark of United Micro Systems, Inc.

JEAN YATES & DR. REBECCA THOMAS

Choosing An Applications Program

How to be a smart shopper in a supermarket of software products.

A computer is only as useful as its software, and selecting software that fits your needs may be a harrowing experience. Along with learning a new vocabulary, read between the lines of product advertisements to determine a package's real power. If you understand the buzz words of software, you can make educated decisions. Applications software is so frequently used by PC owners that some special attention is warranted to assure that you get the right package.

When you look for an applications program, a number of specific features must be considered. Depending on the type of processing and the amount of money you want to spend, different packages may fit your requirements. Parameters to use in comparing them include:

- Languages. Is it in a higher level language, such as C, assembly, or FORTH, that can be moved from computer to computer?
- Ease of use. Does it offer a menu or simple prompts that lead you through the software?
- Auto boot. Does the program automatically turn on and activate itself when you put the disk in the drive and turn on the computer?
- Prompts. Do guides on the screen help you make decisions in moving to the next part of the program?
- Help screens. Do screens of information offer explanations and prompts on specific items of interest so you don't have to refer to the documentation?
- Special function keys. Have special function keys been implemented?
- Quality of manuals. Are the manuals a few xeroxed pages or do they have color graphics and bound binders? Do they meet your needs? Color and typesetting do not necessarily equal quality.
- Tutorials. Is there any source of training on the applications package? Do you have to train yourself, and, if so, are tutorial materials available or included in the set of manuals that you receive?
- Reference manuals. Is there documentation to customize the software or make it communicate with other software packages?
- Point of sale documentation. Is there reasonable material available for presale decisions?

Often times the only way to evaluate a package is to buy a copy of the manual, and manuals are usually available at a high price. Good presale documentation allows you to make an educated decision as to the applicability of the package to your needs.

Take a chart to the computer store. Make your own ratings (see Table 1). Watch out for packages that don't have the features described in the advertising and never buy a package without getting a demonstration and trying it yourself. */PC*

Table 1: A Survey of Applications Software Systems

	Menu Driven	Auto Boot	Prompts	Help Screens	Special Function Keys	Intro. Manual	Tutorials	Reference Manuals	Point of Sale Documentation	Purchaser Comments
Product: Easywriter II Company: Information Unlimited Software (IUS) Price: $350	yes	yes	yes	yes	yes	no	yes	yes	yes	
Product: Company: Price:										
Product: Company: Price:										
Product: Company: Price:										

The Choice of Professionals

Computer Exchange — The Supply Center for the IBM-PC

SOFTWARE for the IBM-PC

BUSINESS

		LIST PRICE	OUR PRICE
	ASHTON-TATE, dBase II, CP/M 86	$ 700	$459
	DENVER SOFTWARE Easy (Executive Accounting System)	$ 725	$545
	HOWARDSOFT, Real Estate Analyzer	$ 250	$189
	INFORMATION UNLIMITED Easywriter II (a WPS)	$ 350	$259
	Easyspeller (88K Words)	$ 175	$129
	IUS Easyfiler (a DBMS)	$ 400	$299
	Easy Planner	$ 250	$189
	INNOVATIVE SOFTWARE, T I M III (a DBMS)	$ 495	$369
★	**INSOFT**, Data Design (a powerful easy to use DBMS) NEW!	$ 225	$169
	INNOVATIVE, Spell Guard	$ 295	$220
	ISA, Spell Guard	$ 295	$195
	ISM MatheMagic	$ 90	$ 69
	LEXISOFT, Spellbinder (a versable WPS in CP/M 86)	$ 495	$249
	MICRO LAB The Tax Manager	$ 250	$189
★	**MICROPRO** WordStar® plus free WordStar Training Manual	$ 495	$365
	MailMerge™	$ 250	$185
	SpellStar™	$ 250	$185
	Special! All Three Above WordPac	$ 895	$695
	WordStar Training Manual	—	$ 25
	NORTH AMERICAN BUS SYSTEM, The Answer	$ 250	$169
	PEACHTREE, Inventory Series 40	$ 600	$399
	Peach Pak 40 (GL, AR & AP)	$ 595	$395
	PERFECT SOFTWARE Perfect Writer™	$ 389	$239
	Perfect Speller™	$ 189	$119
	Perfect Filer™	$ 289	$179
	SELECT INFO Select (a WPS)	$ 595	$375
	SORCIM, SuperCalc	$ 295	$199
	SuperWriter call on availability	$ 395	$269
	Spell Guard call on availability		Call
	SUPERSOFT, Disk Doctor (CP/M 86)	$ 100	$ 75
	Diagnostics II (CP/M 86)	$ 125	$ 95
	Scratch Pad (CP/M 86 and MS DOS)	$ 295	$225
	VISICORP VisiCalc® 256K	$ 250	$179
	VisiDex	$ 250	$199
	VisiTrend/Plot	$ 300	$219
	VisiFile	$ 300	$239
	Desktop Plan	$ 300	$239

UTILITY

	NAGY SYSTEM Copy PC Backup Copier and Utilities	$ 35	$ 29
	NORELL DATA, ™ System Backup Bit Copier	$ 50	$ 39
	NORTON, Norton Utilities, 14 powerful programs, 3 disks	$ 80	$ 65

HOME & EDUCATIONAL

	ACORN Lost Colony	$ 30	$ 24
	AUTOMATED SIMULATIONS, Temple of Apshai	$ 40	$ 29
	Upper Reaches Apshai	$ 20	$ 15
	Jabberbalky	$ 30	$ 22
	Curse of Ra	$ 20	$ 15
	AVALON HILL Galaxy	$ 25	$ 20
	Midway Campaign	$ 21	$ 17
	Computer Stocks and Bonds	$ 25	$ 20
	Voyager	$ 25	$ 20
	Draw Poker	$ 21	$ 17
	BRODERBUND Apple Panic	$ 30	$ 22
	CONTINENTAL, The Home Accountant Plus	$ 150	$112
	DATAMOST, Write-On	$ 130	$110
	Pig Pen	$ 30	$ 22
	Space Strike	$ 30	$ 22
	CONTINENTAL The Home Accountant Plus	$ 150	$112
	DAVIDSON The Speed Reader	$ 75	$ 55
	INFOCOM, Deadline	$ 50	$ 39
	Zork I	$ 40	$ 29
	Zork II	$ 40	$ 29
	ON LINE SYSTEMS Frogger	$ 35	$ 26
	Ulysses & The Golden Fleece	$ 35	$ 25
	PBL CORP Personal Investor	$ 145	$ 99
	SENTIENT Cyborg (Call on availability)	$ 35	—
	SIRIUS, Conquest	$ 30	$ 23
	Call to Arms	$ 30	$ 22
	SPINNAKER, Snooker Troops, #1 or #2	$ 45	$ 35
	Story Machine	$ 35	$ 25
	Face Maker	$ 35	$ 25
	STRATEGIC, The Warp Factor	$ 40	$ 30
	VERSA COMPUTING, Graphics Hardcopy System	$ 25	$ 19

Portland, OR. Cash & Carry Outlet. 11507-D SW Pacific Hwy., Terrace Shopping Center, Tigard, OR. Over the-counter sales only. On 99W between Rte. 217 and Interstate 5. Call 245-1020



HARDWARE for the IBM-PC

			LIST PRICE	OUR PRICE
	AST RESEARCH, Combo Plus 64K with one option	NEW!	$ 495	$379
	Combo Plus 256K with one option	NEW!	$1095	$729
	Options: Async Comm Port, Para Printer Port, Clock/Calender			
	Add $80 for second option and $55 for third			
	Parity Memory Card 64K		$ 395	$279
	256K		$ 995	$659
	Note: All of above cards are memory upgradeable			
	BYAD INC., DS1 280B for CP/M 80		$ 660	$570
	DS2 above with serial port		$ 760	$660
	CORVUS, Hard Disk System. See Corvus Section This Page			
	CURTIS, PC Pedestal™ for Display on PC		$ 80	$ 65
	3 Foot Cable for IBM Mono Display		$ 50	$ 39
	DAVONG DS1 501 Hard Disk, 5 Meg		$1995	$1595
★	**MICROSOFT**, 64K RAM Card w/Parity, RAM Drive & Utildy		$ 350	$259
	128K RAM Card w/Parity, RAM Drive & Utildy		$ 525	$395
	256K RAM Card w/Parity, RAM Drive & Utildy		$ 875	$659
	64K RAM Chips™		$ 175	$129

QUADRAM CORPORATION

	Quadboard 64K, expandable to 256K, 4 function board	$ 595	$445
	Quadboard, 128K, expandable to 256K, 4 function board	$ 775	$575
	Quadboard, 192K, expandable to 256K, 4 function board	$ 895	$645
★	Quadboard, 256K, four function board	$ 995	$685
	Memory Board 512K with Serial Port, #6512	$1295	$995
	Memory Upgrade Kit, 64K (9 chips), #B260	$ 150	$ 95
	Microfazer, Snap-on, 8K Par/Par Epson #ME8	$ 159	$129
	Microfazer, Snap-on, 64K Par/Par, Epson, #ME64	$ 299	$219
	Microfazer same as #ME8 except with copy #MP8	$ 169	$139
	Microfazer, same as #MP8 except 128K	$ 445	$345
	Power Supply for Microfazer, (9V, 25A) #PS1	$ 20	$ 15
	TG PRODUCTS Joystick	$ 65	$ 49

Tandon Disk Drives

	TM100-1 Single Sided 160K	$ 280	$229
	TM100 2 Double Sided 320K	$ 350	$295
	VISTA COMPUTER, 576K Maxicard	$1395	$1195

XEDEX **Baby Blue**

	64K plus CP/M 80 operation	$ 600	$495

PRINTERS, Impact

	EPSON See Epson section below		
	IDS, Prism 132, Color w/Graphics	$1995	$1549
	Prism 80, Color w/Graphics	$1795	$1450
★	Pager Tiger 440 w/Graphics & 2K Limited Special!	$1295	$495
	Microprism 480, near letter quality	$ 799	$699
	NEC, 8023 Printer F/T	$ 695	$525
	OKIDATA, Microline 82A 120 Cps 80 Col Para & Serial	$ 649	$495
	PAPER, Tractor Feed Variety in stock call for price		

CORVUS SYSTEMS

	LIST PRICE	OUR PRICE
★ 6 Meg Hard Disk	$7995	$2495
11 Meg Hard Disk	$4795	$3995
20 Meg Hard Disk	$5795	$4795
IBM PC Interface (IBM DOS) Manual & Cable 5	$ 300	$239
Mirror, built-in for easy backup	$ 790	$649
Apple Interface, Manual & Cable 5	$ 300	$239

Other Interfaces: Omni-Net, Constellation, Mirror. All in Stock

8" CP/M-80 BUSINESS & SYSTE SOFTWARE

		LIST PRICE	O PR
	ADVENTURE, Adventures #1 to #12 inclusive, 8"	$ 129	$
★	**ASHTON-TATE**, dBase II, 8"	$ 700	$
	COMSHARE TARGET, Target PlannerCalc	$ 50	$
	Masterplanner	$ 325	$
	PlannerCalc Applications Pkg	$ 50	$
	PlannerCalc Combo Pkg	$ 90	$
	INFOCOM, Deadline 8"	$ 60	$
	Zork I 8"	$ 50	$
	Zork II, 8"	$ 50	$
	INNOVATIVE Spellguard 8"	$ 295	$
	ISM, MatheMagic	$ 100	$
	MICROCRAFT, Legal Billing & Time Keeping	$ 750	$
	Prof. Billing & Time Keeping	$ 750	$
★	**MICROPRO**, WordStar® plus free WordStar Training Manual	$ 495	$
	MailMerge™	$ 250	$
	SpellStar™	$ 250	$
	Special! All Three Above, WordPac	$ 895	$
	WordStar™ Training Manual	—	$
	DataStar™	$ 295	$
	SuperSort™	$ 250	$
	CalcStar™	$ 145	$
	Special! All Three Above DataPac	$ 695	$
	MICROSOFT, Multiplan	$ 275	$
	Fortran 80 8"	$ 500	$
	BASIC Compiler 8"	$ 395	$
	COBOL 80, 8"	$ 750	$
	BASIC 80 8"	$ 350	$
	multiplan/StarTrek 80	$ 200	$
	M Sort 80	$ 195	$
	Edit 80	$ 120	$
	Macro 80	$ 200	$
	OASIS, The Word Plus (a WPS)	$ 150	$
	PEACHTREE, GL, AR & AP Series 40, all three	$ 595	$
	Inventory Series 40	$ 600	$
	Peach Text, Spell & Mail, all three	$ 595	$
	Call on Series 8 each	$ 750	$
	PERFECT SOFTWARE Perfect Writer™	$ 389	$
	Perfect Speller™	$ 189	$
	Perfect Speller™	$ 289	$
	QUALITY, GBS with 3 generators, (a DBMS)	$ 700	$
	SELECT INFO, Select (a WPS)	$ 595	$
	SORCIM, SuperCalc	$ 295	$
	Super Writer call on availability	$ 395	$
	Spell Guard call on availability	$ 295	$
	SUPERSOFT, Disk Doctor (CP/M 80)	$ 100	$
	Diagnostics II (CP/M 80)	$ 125	$
	Scratch Pad (CP/M 80)	$ 295	$

MONITORS

			LIST PRICE	O PR
	NEC, 12" Green		$ 249	$
	12" Color Composite		$ 450	$
	SANYO, 9" B&W		$ 190	$
★	9" Green	Special truckload sale	$ 200	$
	12" B&W		$ 250	$
	12" Green		$ 260	$
	13" Color Composite		$ 470	$
	13" Color RGB		$ 995	$
	ZENITH, 12" Green		$ 150	$
	AMDEK, 12" Green #300		$ 200	$
	13" Color I, Composite		$ 449	$
	13" Color IIA, RGB, Hi Res. (Ap II, III & IBM PC)		$ 999	$
	13" Color III, RGB, Commercial (Ap II, III)		$ 569	$
	DVM, Color II or III to Apple II Interface		$ 199	$
	Note: Color II and III come with cable for IBM PC			

DISKETTES

★ **Control Data Corporation 12 for 10 Special. Limited Tim**

	CDC, 120 each, 5¼ with ring, SS, SD (Apple, IBM, etc.)	$ 450	$
	12 each 5¼ with ring, SS, SD (Apple, IBM, etc.)	$ 40	$
	12 each 5¼ with ring, SS, DD (H/P, IBM 320K, etc.)	$ 51	$
	12 each 8" SS, SD	$ 51	$
	10 each 5¼ with ring, DS, DD (IBM)	$ 50	$
	IBM, 10 each, 5¼, SS, SD (Apple, IBM, etc.)	$ 60	$
	10 each, 5¼, SS, DD (H/P, IBM 320K, etc.)	$ 65	$
	VERBATIM, 10 each 5¼, with ring, SS, SD or SS, DD	$ 50	$
	MAXELL, 10 each 5¼, SS, SD	$ 55	$
	DYSAN, 10 each 5¼, SS, SD	$ 55	$
	10 each 5, DS, DD	$ 65	$

EPSON PRINTERS & ACCESSORIES

	MX80 F/T III, with Graftrax+	$ 745	$54
	MX100 F/T III with Graftrax+	$ 995	$73
	IBM PC to Epson Cable	$ 60	$ 4
	Apple Interface and Cable for MX80 or MX100	$ 120	$ 9
	Grappler+ by Orange Micro specify your computer	$ 165	$11
	Apple Graphics Dump	$ 15	$
	Atari to Epson Cable	$ 40	$ 3
	TRS 80 to Epson Cable	$ 40	$ 3
	Other cables, interfaces, ribbons, heads and paper in stock		Ca

ORDERING INFORMATION AND TERMS: All mail to P.O. Box 1380, Jacksonville, OR 97530
All items usually in stock. We ship immediately on Cashiers Checks, Money Orders, Fortune 1000 Checks and Government Checks. Personal, Certified or Company Checks allow 20 days to clear. No C.O.D. Add 3% for VISA or MC. Include telephone number. Add 3% for shipping, insurance and handling ($ I&H) with $5 minimum. UPS ground is standard so add 3% more for UPS BLue with $10 minimum. Add 12% total for $ I&H for US Postal APO or FPO with $15 minimum. For Hawaii, Alaska and Canada, UPS is in some areas only, all others are Postal so call, write, or specify PO. Foreign orders except Canada for $ I&H add 18% or $25 minimum except for monitors add 30% or $50 minimum. Prices subject to change and typo errors, so call to verify. All goods are new, include factory warranty and are guaranteed to work. Due to our low prices, all sales are final. Call before returning goods for repair or replacement. Orders received with insufficient $ I&H charges will be returned. ORDER DESK HOURS 8 to 6 PST, M-F and 10 to 4 Sat. 1 PM here is 4 PM in NY

OUR REFERENCES: We have been a computer dealer since 1978 and in mail order since 1980. Banks: First Interstate Bank, (503) 776-5620 and Jefferson State Bank, (503) 773 5333. We belong to the Chamber of Commerce, (503) 772-6293, or call Dun & Bradstreet if you are a subscriber.
Computer Exchange is a division of O'Tech Group, Inc.

A DIV. OF O'TECH Group, Inc. THE WORLD'S LARGEST COMPUTER MAIL ORDER FIRM

Computer Exchange

NATIONAL ORDER DESK **TOLL FREE**
(800) 547-1289
OTHER ORDERS: 772-3256

Hot Line For Information On Your Order
(503) 772-3803

NO SALES TAX

ALL MAIL: P.O. Box 1380, Jacksonville, OR 97530

WAREHOUSE AND OFFICES BY APPOINTMENT AT 6791 UPPER APPLEGATE ROAD

★ Star indicates a Best Buy. AD #943

BOOK REVIEW/LES COWAN

Beyond Beginner's BASIC

A book for the sophisticated reader who has a special interest in learning BASIC.

Programming the IBM Personal Computer: BASIC
Neil Graham
(Holt, Rinehart & Winston, 1982)
287 pages; $16.95

Another book about programming the PC seems to emerge every second week. Publishers don't want to miss out on the action or the outrageous prices computer books command these days. Some books are better than others, however, and a certain degree of specialization is beginning to appear. This book goes into great detail, uses sophisticated examples, and is written by a professional programmer speaking to less experienced peers or serious amateur programmers.

Graham's is different from many books that chat in a casual voice about programming as an engaging hobby to be enjoyed in one's leisure time. Programming can be that, although most hobbyists find that they have less and less time left for other forms of leisure. Although programming is no longer solely for the professional, it does mean different things to different people, and mass-market programming books are no longer written for everyone.

This book seems aimed at a less naive PC owner than many other books designed to teach the PC's version of BASIC. Some hobbyist programmers may find that the topics are too complex and involved for their purposes. Others, however, will be grateful for a book that offers more insight into the inner workings of BASIC and a more complete presentation of its powers than most books available in this market.

The author is an experienced programmer whose prose is clear and businesslike. While employing a bit of wit, his approach is fundamentally serious. He exhibits the programmer's concerns of not only writing a working program, but writing one that runs quickly and uses a minimum of memory space. He also discusses program design in greater detail than other books, introducing the concept of structured programming and its procedure for the modular organization of programs.

Graham's approach requires the use of some jargon, however. If words such as *algorithm* make you uncomfortable, you might avoid this book or use it to overcome your uneasiness, since Graham explains all the words he uses.

IF WORDS such as* algorithm *make you uncomfortable, you might avoid this book or use it to overcome your uneasiness.

A more serious criticism is that Graham offers no solutions to the exercises presented at the end of each chapter. The reader who has nobody to go to for advice will have to write and rewrite the exercise routines until they work. This trial will either teach the lessons well or the reader will form the conviction that programming is cruel and unusual, and give up in a fit of frustration.

Chapters are organized by topics. Each chapter introduces the topics, gives examples and samples that guide the reader through various aspects, and ends with exercises to test the reader's understanding. Sample program lines are printed in large green type as in many IBM PC manuals. Where complete programs are written and analyzed, they are listed in small type but in their entirety. While the book uses very few illustrations, those that are included seem sufficient, consisting primarily of simple boxes to represent arrays.

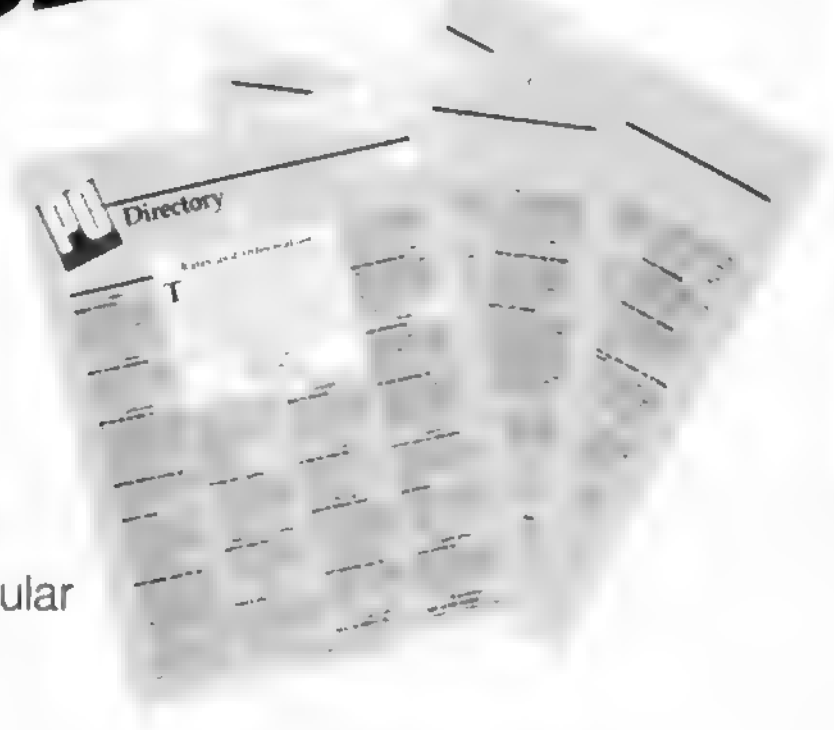
The first three chapters cover basics: the three versions of PC BASIC, editing, saving and loading programs, the keyboard, floating point arithmetic, constants, variables, and strings. Graham occasionally refers the reader to PC manuals for information beyond the scope of the book and once or twice points out errors in a manual, such as the first edition of the BASIC manual, which incorrectly says that variable names may be longer than 40 characters.

Unlike many similar books, Graham's attends to the importance of a program's readability as well as its effectiveness. He emphasizes the value of formatting lines of code to reflect their function. For example, when using the WHILE-WEND statement, the words *WHILE* and *WEND* should each be placed at the beginning of a line and the code between them indented. Someone reading the code may then see at a glance that these lines form a structural unit within the program. This sort of thing is standard practice for professional programmers, but it is often neglected in mass-market programming books. Although he mentions the use of REM (Remark) statements, Graham does not give them the role they deserve in making a program understandable.

After Chapter 3 programming instruction accelerates. Graham covers the BASIC commands and control structures one by one, in a logical sequence, with examples starting simply and becoming more sophisticated. The author is plainly familiar with PC BASIC, pointing out a bug in the BASIC interpreter and how to avoid it; explaining why the LOC and LOF commands are useless; and noting that IBM prefers *housecleaning* to *garbage collection*, a phrase traditionally used by programmers to refer to a procedure in which a computer clears obsolete data from its memory.

Graham goes beyond teaching com-

Announcing An All-New PC Directory!



We're revising and expanding the popular PC Directory.

READERS—you'll find it super easy to locate the products and services you need. Categories have been expanded, and listings have been simplified. The new Directory is a quick and comprehensive "yellow pages" that will save you time and effort locating the programs, hardware and services you need.

ADVERTISERS—you'll find that our new Directory is well targeted and economical. You'll never find a better way to test the market for a new product, or to cross-reference your display ads in PC. The new format improves the readability of your listing, and the expanded coverage of the Directory increases your readership.

To place a listing in the new directory, **call PC's Directory Department at 415-753-8088.** Listings cost $125 per issue. Deadlines are the first of each month prior to publication.

mands; he offers tips on programming technique, such as the use of sentinel values in a list, or the need to consider program overhead—the amount of code required by alternate solutions to a programming problem. Conspicuous by their absence in the coverage of BASIC commands are the PEEK, POKE, and CALL commands. This was a curious departure from Graham's usual tendency to be more sophisticated in his discussions. On the other hand, the discussion of techniques for sorting data in arrays may prove a little

TECHNIQUES for sorting data in arrays may prove a little too sophisticated for the novice programmer.

too sophisticated for the novice programmer who tries to learn BASIC from this book alone.

In the last three chapters Graham discusses the powers provided by Disk BASIC and Advanced BASIC: disk storage using both sequential and random access files, music, event-trapping (interfacing with external devices such as light pens and game paddles), color displays, and games. The section on the PC's musical capabilities was especially welcome since it is often neglected by other books.

Included is a glossary and an index, which are both fairly comprehensive. On the Cowan Index (number of glossary entries multiplied by number of index entries divided by number of total pages) this book scores 109.

You will not find a better book about BASIC, although you can find many from which it is easier to learn the fundamentals. This book is for those who already know something about programming, have a teacher available when needed, or have an extraordinary aptitude. If you have none of these, remember this book. When you have exhausted your first book on BASIC, this one will provide many hours of learning. **/PC**

Words are not enough.



[illegible] beyond [illegible]. We believe adventures should too. Asylum is the first adventure game for the IBM Personal Computer to feature 3D graphics. Hallways recede into the screen as though you are actually there. Doors open and close. Beds, desks, and other inmates are drawn on the screen instantaneously! And unbelievably, NO GRAPHICS BOARD IS REQUIRED!

What is Asylum? Asylum is a real-time simulation that takes place in a building with 1500 locations. It is inhabited by crazed inmates, sadistic guards, and evil doctors. Your goal? ESCAPE!

Asylum understands **complete sentences**, not just choppy one and two word commands. Sentences like "Drop everything on the desk except the matches" are interpreted and acted on **instantly**. Further, the command "VOCABULARY" will show you the entire [illegible] the need to second guess [illegible] you have never met.

Asylum supports **printer output.** If specified, all input and messages will be printed without slowing down the game. Among other things, this allows you to print the [illegible] and/or your inventory at any time. A **panic button** allows those of you playing on the job to emergency abort, and [illegible] SAVE GAME allows you to [illegible] games to be played on your disk. Since Asylum requires [illegible] to save, saving allows you to resume a previously adjourned game.

[illegible] by Med Systems and [illegible] Apple [illegible]. The [illegible] wash your [illegible].

Asylum is packaged in a custom vinyl album with [illegible] and [illegible]. Many other [illegible] and [illegible].

ASYLUM IBM DISKETTE $39.95

Please add $2.00 for first class postage, **$4.00 or overseas air mail.**

MED SYSTEMS SOFTWARE

P.O. BOX 3558, CHAPEL HILL, NC 27514

TO ORDER, CALL 1-800-334-5470

Or see your dealer

BOOK EXCERPT/HAL GLATZER

Writing And Editing With A Word Processor

This book is geared for typists who are word processing novices. Readings are meant to alleviate the fears associated with converting from a typewriter to a computer.

Introduction to Word Processing
Hal Glatzer
(Sybex, Inc., Berkeley, 1981)
205 pages; $12.95, $1.50 handling

Introduction to Word Processing *takes the reader through the technical similarities and differences between word processors and typewriters. In the following excerpt, Chapter 6, the reader learns exactly how a word processor functions. Included are descriptions of the control key, the function keys, and the cursor. The chapter concentrates on editing copy, conducting global search and replace, proofreading, and manipulating text.*

If you think of an ancient scroll, instead of modern pages, you will grasp an essential concept of word processing. First, unroll the scroll a little at a time, holding the rollers above and below the text: this is the "window" that the CRT screen shows. Now unroll the entire length and hang it up, as from the branches of a tree, at eye level in a circle around your head. If you stand at the center, then pages, paragraphs, headings, etc., are meaningless. What matters is "gestalt," the whole thing at once. Every place in the text is (for all practical purposes) equidistant from every other.

With that in mind, you can understand the differences between word processing, which is oriented to the whole document, and typing, which deals with only one page at a time. A word processor lets the user control nearly everything that can happen to a document—in its entirety.

Here are some of the options.

Illustration: Jack Desrocher



Size of Display

Electronic typewriters and the newest portable word processors show one line of text. Some machines designed for clerical work have six or a dozen lines. The majority of word processors display 25 lines: 24 lines of text plus a line of information, such as margin or tab settings. Some display a full page (i.e., 66 lines), and there are also special-purpose machines which show two pages simultaneously. Full-page displays are useful for visualizing the finished appearance of a letter or other one-page document.



There is a story (probably apocryphal) that some vendors tell. A word processor with a 25-line CRT display was installed in the headquarters of its world-famous manufacturer, and a secretary was learning to use it under the eagle eyes of her boss. He stood over her shoulder peering at the screen and complained—loudly—that he couldn't read it. A nearby engineer ran back to his lab and emerged with a full-page CRT display. This pleased the boss. He told the engineer to make sure all of the company's word processors were built that way, and he presented the prototype to his secretary. She thanked him but—privately—told the engineer that the full-page display was distracting; her eyes could take in only a few lines at a time, and that was enough.

Color of Display

Most word processor displays are monochromatic: white, green or amber letters on a black screen. Some reverse the image to project black letters on a white background, simulating the appearance of typed pages. True color TV is more expensive to build and has so far proved valuable mainly in graphics applications. Color TV resolution is typically not as crisp as black and white TV. This may change in the future but, for now, color is not offered in word processing. The choice between white, green and amber is purely personal. Proponents of green and amber claim that they are easier on the eyes.

Shape of the Letters

The text you are reading was set by a typesetting machine from an alphabet in which each letter is of the same *font* or style. When word processing spun off from data processing, it was not always convenient to rewrite the software that controlled the shape of the displayed letters; thus, some terminals use fonts in which letters with "descenders" (those hanging parts of a g or p) are moved up within the line. People who are accustomed to typewriting will find it annoying to read undescended letters. Although most printers type normal letters, screen displays without them can frustrate operators and make proofreading on the screen slow, if not difficult.

Glare and Viewpoint

You can't watch TV in the sunshine. Bright overhead lights and picture windows compete with the CRT display. Since manufacturers can't control where the system will be installed, most screens are laminated with a textured film to minimize glare. Tilting the screen may also cut down glare.

Typewriters are often placed on desk-extensions or small tables that are lower than conventional desks. Although the height of the keyboard is also important with word processors, care should be taken so that the CRT screen is not too low for easy viewing. If a terminal will be used by more than one person, it should be adjustable in order to accommodate each operator. In some models, the keyboard may be adjusted separately from the screen or even detached from the screen. There is no engineering reason why the keyboard has to be bolted to the screen; a cable can carry keyboard signals to the central processor which, in turn, communicates with the screen. If this flexibility is desirable in your situation, it is worth the extra price of such terminals.

A WORD processor lets the user control nearly everything that can happen to a document.

The Keyboards

The Selectric is only 20 years old, and its popularity has not diminished. As any secretary will testify, the keys make a very satisfying "click" and were carefully designed to be comfortable. Not surprisingly, word processing manufacturers have tended to mimic the Selectric keyboard. Computer terminal keyboards may be made flat, silent and waterproof for unpredictable environments, such as factories or military installations. But those that are used for word processing are as typewriter-like as possible. It is not necessary, from an engineering standpoint, to have a key ride down a quarter-inch under a finger's touch and make a noise when it contacts the bottom. But that response is so much in demand that no word processor has been successfully marketed without it.

The Keys

The standard typewriter, with its "QWERTY" layout is the *default option* for most word processors: anything different is a special order, such as keyboards that have special characters for foreign languages and scientific or mathematical notation. But aside from the alphabet and number keys, hardly any equipment is standardized, and some familiar keys have unfamiliar functions. There is frequently a REPEAT key or, to achieve the same effect, some keys may generate repeated characters if they are held down, similar to the SPACE bar on many electric typewriters.

The SHIFT LOCK Key

In addition to the SHIFT key (for capital letters and the symbols above the numbers), many word processors have a SHIFT LOCK, also called a CAPS LOCK key. Usually, such keys only affect the letters—not the numbers and punctuation marks. This is a convenience to computer programmers, whose style includes commands written in capitals but which also includes many numbers. However, for other users, it is occasionally frustrating to look back and see, for example, 9s and 0s where parentheses were desired.

The RETURN Key

The carriage RETURN key is also different from that of a typewriter. Since word processors *wrap* words automatically (carrying them to the next line if they will not fit within the right margin), it is not necessary to hit RETURN at the end of each line. Doing so may complicate reformatting the text with, for example, new margin specifications. On practically every word processor, RETURN is a *mandatory* line-feed and return to the left margin, which is desirable at the end of a paragraph but not within it.

This is an example
of what happens if a RETURN
command is allowed
to interfere with the word processor's
tendency to wrap
words automatically: truncated lines
and some sacrifice
in legibility.

The CONTROL Key

Some word processors use a key called CONTROL (or CODE) as a kind of SHIFT key. Instead of changing the letter typed, it changes the very function of the key itself. Holding down the CONTROL key and simultaneously pressing another key produces a specific word processing function. It may, for example, move the cursor in a defined direction (up, down, left, or right) for a defined distance (e.g., one character, one word, or one line).

The use of CONTROL-key combinations to achieve word processing functions is very common; it allows word processing software to be run on the thousands of terminals that were built for data processing and that, therefore, have no extra keys reserved for word processing functions. When stand-alone word processors were designed, the target user was presumed to be non-technical, so many manufacturers put control over cursor movement, as well as other word processing functions, into unmistakable, single-purpose keys. This greatly simplifies training and operating. But a price is paid in the cost of the terminal: special-purpose keys work because enough intelligence is built into the terminal to handle them, and intelligence is more expensive than ignorance.

Learning to use CONTROL-key combinations may take time and practice, but experienced typists do not mind using them. The CONTROL key is almost always located next to the CAPS LOCK or SHIFT LOCK key, and that enables the typist to maintain the "home" position of the hands, which is best for touch-typing.

Function Keys

Stand-alone word processors and intelligent terminals do not rely on CONTROL-key combinations to perform word processing functions. They may have as many as two dozen *function keys* which act on the computer directly. Cursor-movement keys are one example; most of the editorial functions that are described in this chapter are also available as function keys. Unless a person has had a lot of computer experience and enjoys the flexibility that CONTROL keys offer, he or she will almost certainly prefer to use function keys. Having one button for inserts, another for deletions, a third for scrolling forward and a fourth for scrolling backward, etc., makes it easy to learn word processing. Even after months or years, a writer will enjoy the feeling of control that comes when a single keystroke changes a piece of text. It is a paradigm of computer power.

Low-priced word processors, and some microcomputers, may change the function of a ten-key numerical pad. The 8, 2, 4 and 6, for example, may become the cursor-movement compass, with 5 as HOME (i.e., the upper left corner). The 7, 9, 1 and 3 keys may be used for inserting or deleting.

On other machines, a row of keys that are engraved with specific functions may be installed above the top row. These may also be modifiable: software may allow a vendor (or an operator) to customize their operation. In such cases, the keys may simply be engraved with a function number, and the specific utility of each key, as defined by the software, is identified by a stick-on label or a strip of paper.

The CONTROL key may be used to multiply the number of functions. For example, a machine that has 20 function keys may recognize a second set of functions for each key when the keys are used in



Not Even These Guys Can Promise Complete Protection

Does your insurance?
It's a startling fact, but most homeowners insurance doesn't cover home computers with business uses. That means your valuable investment could be unprotected even while you read this. Exposed to the risks of fire, theft, even accidental damage.

SAFEWARE™ does
Introducing SAFEWARE. The new insurance designed to protect your valuable investment when others won't. Regardless of use, SAFEWARE provides full replacement coverage, after a $50 deductible, for all hardware, media and even purchased software.

For just pennies a day
Find the value of your system in the table below and see just how low the price for SAFEWARE protection really is. If you need higher limits, call us toll free for a quote.

Columbia National General Agency
New SAFEWARE insurance is underwritten by the American Druggists' Insurance Company, and is offered exclusively by Columbia National General Agency. Both companies are members of the Armco Insurance Group, one of the nation's leading property and casualty insurers.

For immediate coverage
No matter what the application, you can get immediate coverage for your system with the coupon below. Mail to: Columbia National General Agency, 88 East Broad Street, Columbus, Ohio 43215. Or call the toll free number for coverage today! 800/848-0598. (In Ohio call 614/224-7235.)

CNGA
COLUMBIA NATIONAL GENERAL AGENCY



Amount of Insurance	Annual Premium
Up to $2,000	$ 35
$ 2,001-$ 5,000	$ 60
$ 5,001-$ 8,000	$ 75
$ 8,001-$11,000	$ 90
$11,001-$14,000	$105
$14,001-$17,000	$125
$17,001-$21,000	$140

Not avail. in AL, AK, AZ, AR, DE, DC, GA, HI, ID, KY, LA, ME, MS, MT, NV, SC, SD, or WY

Send for immediate protection:
CNGA, 88 E. Broad St.
Columbus, Ohio 43215

Name
Street
City
State Zip
System value $
☐ Check enclosed ☐ VISA ☐ MasterCard
Card # Exp
☐ Send additional information

BSMP6

combination with CONTROL, and a third set when used in combination with SHIFT. Sixty separate functions are thus performed by 20 keys.

The Cursor

On a typewriter, text originates in one place only: where the key strikes the paper. The carriage moves the paper left, away from that spot, to accommodate the next letter. A Selectric reverses that procedure, sliding the typing element to the right along a stationary carriage.

On a CRT word processor, text originates at the cursor. The cursor may be a box or an underscore line, it may be reversed-out (black on white) or it may blink, but it is unmistakable on the screen.

It is hard for some people to get used to a word processor because the words appear directly in front of their eyes, rather than down near their finger tips. Touch-typists have less trouble with this, and most users become faster typists with a word processor because they don't have to look down.

Some people say that they are distracted by seeing words appear one letter at a time, left to right, instead of seeing them peel off from a stationary point as on a typewriter. But most people get used to it quickly. At least one manufacturer simulates a typewriter by generating all text on a single line near the bottom of the screen and inching each completed line up the screen when it is full.

WORD processing manufacturers have tended to mimic the Selectric keyboard.

Cursor Positioning

As the example of the scroll showed, the cursor may be moved anywhere in the text. To reach the beginning or the end (often called the top and bottom) of a document, or any other designated place, there are usually special-purpose keys or commands (see the discussion of function keys). Once a document is paginated, some word processors offer a way to go to a specific page on command.

All word processors designate keys for moving the cursor around any given page: up, down, sideways, or HOME. On many machines they are separated in some way from the *alphanumeric* keys. When single-purpose keys are used to move the cursor, they are usually labeled with arrows that indicate the direction of cursor movement. One machine uses a touch-sensitive plate and others use a joy-stick to move the cursor.

Word processors or terminals that do not have single-purpose function keys move the cursor by means of CONTROL-key combinations. In some software for microcomputers, the "compass" of cursor movement is the diamond-shaped layout of the E, S, D and X keys. CONTROL-S moves the cursor one character to the left; CONTROL-D moves it one character to the right; CONTROL-E moves it up one line; CONTROL-X moves it down one line.

In some systems, the cursor may also be moved forward to the first character of the next word, sentence or paragraph by function keys or by CONTROL-key combinations. The compass keys, together with a CONTROL or function key, may also perform extra tasks: moving the cursor directly to the right or left margin; to the top-left or bottom-right of the screen; to the center of the screen; or to the beginning or end of the file. The cursor may be moved continuously by holding down the desired cursor-movement key, or by pressing it in conjunction with a separate REPEAT key.

Menus and Commands

Word processing programs that use CONTROL-key commands may be run on virtually any terminal, but they require operators to learn many extra things in addition to basic familiarization with the equipment. To overcome this problem, such programs typically display *menus* on the screen that list all of the possible CONTROL-key commands.

So-called *menu-driven* software is very common. Even in systems that do not require CONTROL keys, the operator is frequently given a choice of activities: edit, print, store, purge, etc. This is vital if a word processor will be used by a variety of people under differing circumstances, or if tasks must be undertaken that would otherwise require specialized knowledge, such as typesetting or telecommunication. Menu-driven software is very popular; it is one of the hallmarks of user-*friendly* systems, making them as easy as possible for untrained people to use.

Command-driven software, on the other hand, starts with the idea that you already know what you want. If you eat at a different restaurant every day, you will always need to read a menu. If you only eat at one restaurant, you will be able to give

A WRITER will enjoy the feeling of control that comes when a single keystroke changes a piece of text.

the waiter your order as soon as you are seated—you may even call ahead to order and your meal will be waiting for you when you arrive. In the same way, command-driven software is faster to use. Moreover, there are some technical advantages; just as menus occupy space on the screen that could otherwise display text, so they also take up space within the computer's memory. Without menus you can process longer texts at greater speed, or you can use editing and printing programs that are larger and thus more versatile.

The choice is optional only in mini- or microcomputer software. Stand-alone word processors offer some combination that uses menus at the start to select possible tasks, with those tasks directed by commands. Well-written menu-driven software often permits experienced users to suppress some or all of the menus, allowing the user to directly issue commands without waiting for a menu to appear on the screen. Thus, more text can be displayed on the screen and some time will be saved. With such an option, menu-driven software may be preferable to command-driven software. But the choice, if available, should not be made until both approaches have been tried. Programming is still more of an art than a science,



and no two approaches to word processing are identical.

Command Sequences

On most mainframe or minicomputers, the CONTROL key is not available for word processing operations. Instead, commands must be issued to tell the computer what to do. These are usually a sequence of characters that are embedded in the text and, therefore, they must be distinguishable from the rest of the text. A punctuation mark immediately followed by a letter or group of characters is often used. In one system, ".p" means "start a new paragraph" and ".sp1" means "initiate single-spacing." In another "—6d" means "delete six characters to the left of the cursor." Although they are clumsy compared to function keys, command sequences are versatile and modifiable by the software. In any case, they are required if a large computer is to be used for word processing.

EDITING

Once text is written, it will probably have to be modified. Even touch-typists make mistakes—the success of "correcting" Selectrics is proof. Original material is usually created on a typewriter in stages: writing the first draft, striking over unwanted material with an X (or with a pen), squeezing fresh text between the lines, making marginal notes to connect paragraphs or pages, and then retyping a second draft. That version is edited for content and style, then retyped. The final draft must be free of spelling or typographical errors.

All of these procedures are automated or placed under the writer's control by a word processor. To accomplish them, the machine responds not only to the alphabet and number (alphanumeric) keys, but also to keys which issue commands. Pushing hardware buttons may be deceptive; the real work is done by the software.

Before the expression *word processor* became popular, such software was called a *text editor*. Today, this phrase is reserved for software that is mainly oriented toward editing computer programs. Many of the word processing software packages for mainframe and minicomputers are actually text editors; they are very powerful for editing programs but may lack some of the features of true word processing software. If a text editor has all the features that you need, then by all means use it.

Corrections

Most word processors take the over-writing approach: replacing the character under the cursor with another, then moving the cursor one space to the right. On some equipment, however, it is necessary to issue a command or press a special key that tells the computer that you want to over-write rather than insert.

Line Numbers

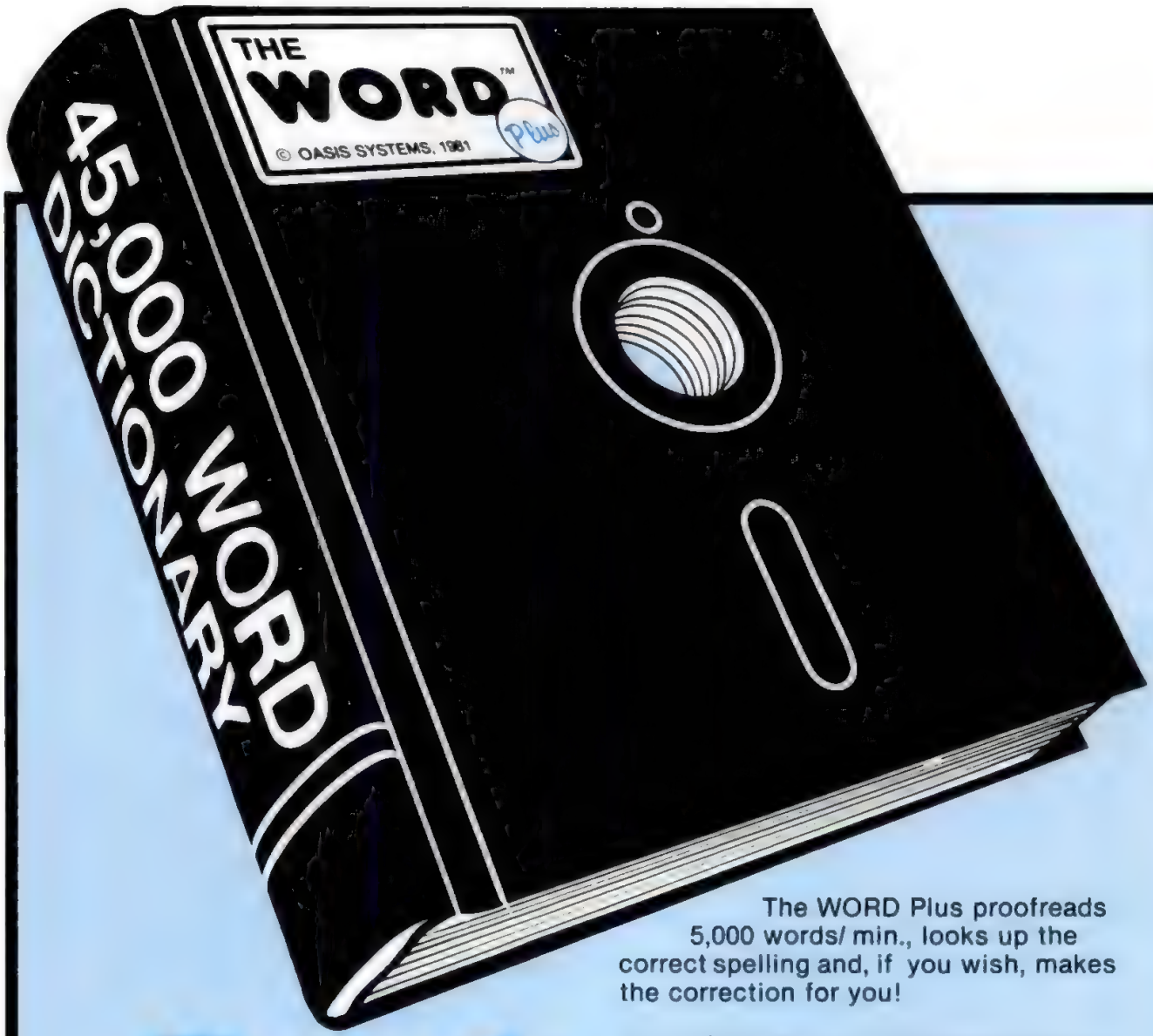
Mainframe and minicomputers frequently number the lines in a document; this reflects the software's development from programming, where line numbers are absolutely essential. On such machines, it may be necessary to specify the line number that you want the cursor to enter in order to make a correction. The line numbers can be suppressed when the document is printed. At the beginning of an editing session, when a document is first created, some of these systems may also require the user to tell the computer the maximum number of lines which that document is expected to occupy. This helps determine where, internally, the document will be stored for greatest efficiency, but since it is difficult to estimate that size beforehand, users typically call for much more than they need.

Insertions

Like snowflakes, insert procedures are rarely alike. In many machines, the writer moves the cursor to the place where an insert will begin, presses a function key, and then types in the new material. It is usually necessary to press a second key (or the INSERT key again) to signal the end of the insert. Word processing software for mainframes and minicomputers may require a command sequence such as ".i" to signal the start of an insert. In very user-friendly stand-alone systems, pressing the INSERT key generates a message on the screen (such as "INSERT WHAT?") as the text opens to receive the inserted material.

MENU-driven software is very popular; it is one of the hallmarks of user-friendly systems.

A distinction may be required between inserting a few letters or words (*character insert*) and inserting larger blocks of text (*line insert*). This happens when the insert function itself is subordinated to the text *wrap* and paragraph reformation. When



The WORD Plus proofreads 5,000 words/ min., looks up the correct spelling and, if you wish, makes the correction for you!

Teach Your Computer to Spell

The WORD Plus can hyphenate files by inserting *soft hyphens* so words break precisely.

The WORD Plus counts words, solves anagrams, crosswords and rhymes!

The WORD Plus works! . . . with WordStar™, Magic Wand™, Mince™, and others.

Available for the IBM Personal Computer.

The WORD Plus. $150.
For more information call: Wayne Holder

Oasis Systems
2765 Reynard Way, San Diego, CA 92103
(714) 291-9489

Distributed by:
SOFTWARE DISTRIBUTORS
1-800-252-4024 (in California)
1-800-421-0814 (outside California)

WordStar is a trademark of Micro Pro, Int'l.
Magic Wand is a trademark of Peachtree Software, Inc.
Mince is a trademark of Mark of the Unicorn.



you type new characters in the character insert mode, the text line is pushed ahead, frequently forcing a new wrap to the left margin. If software is not written to handle this, or if the available *scratch-pad* memory is too small, the word processor may lose some of the text—usually what's being inserted. Fast typists complain bitterly about this, since they may be able to "outrun" the machine; it happens even on expensive equipment. Consequently, an alternate insert mode may be used that splits the text at the insert point. Text to the right of it may be taken off the screen entirely, or a line or a few words may be left at the bottom. This way, any amount of new text may be written at any speed; the wrap and reformation will not be done until the insert is completed. Good software offers both modes because of the trade-off: line inserting takes more time if only a few characters are needed.

Deletions

When you SPACE over a letter, you substitute a blank character; when you DELETE it, you remove it from the text and the word processor closes up the line like the sea closing over a sinking ship. As with inserting, it may be necessary to choose between deleting a character, a word, a line, several lines or even pages.

A CONTROL key, a function key or a command sequence will initiate the action, which nearly always begins at the cursor. The simplest method deletes whatever is under the cursor; another press of the key deletes what has slid under the cursor after the first character is gone. Moving the cursor generally does not wipe out what it passes over; rather it interrupts the DELETE function, which must be restarted when the cursor has been placed over some other unwanted material.

On stand-alone machines a message may appear ("DELETE WHAT?"), and when the cursor is moved, the material to be deleted is then highlighted or underscored in some way. A second key (sometimes called EXECUTE) may be required to actually delete the "condemned" text. Sometimes the text is identified not by moving the cursor, but by typing the character which appears at the end of the unwanted text. For example, if the DELETE mode is selected, and the character "." is typed, then the cursor will move to the next appearance of the period (usually the end of the current sentence) and thus prepare the text up to that point for deletion. This may be automatic, even if the text is wrapped onto another page, off-screen.

Word processors may distinguish between character, word and line deletion with separate CONTROL keys or function keys. On some, the deletion may be directed to the character under the cursor, or to the character to the right or to the left of the cursor. A whole word may be deleted with one command, but it is usually the word to the right of the cursor. A line or more can be removed with the appropriate keystroke and accidental erasure is possible. To guard against accidental erasure, word processors may require the following:

- a second pressing of the DELETE key
- pressing a second key, such as EXECUTE
- a response from the operator to a message displayed on the screen, such as "Please confirm that ___ characters are to be deleted: Y/N"

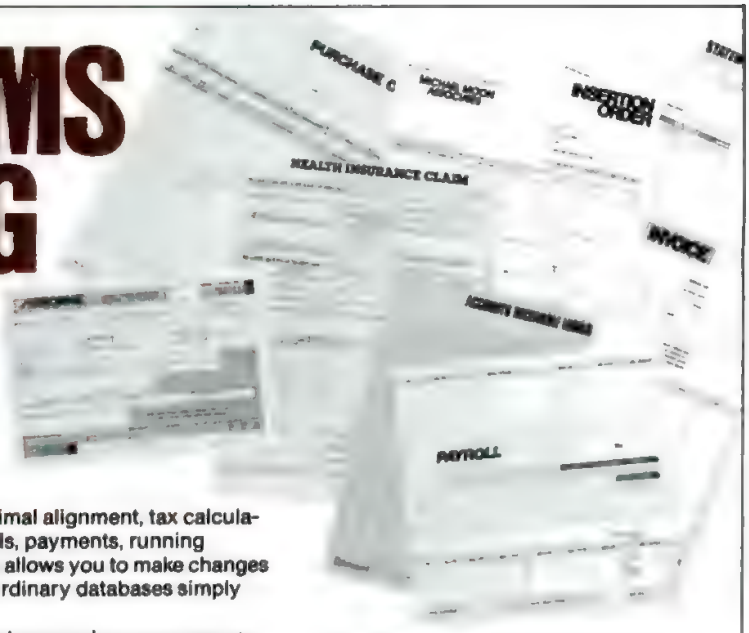
On a few machines, deleted material is held in a scratch file. This is a boon to first-time users and experienced typists alike; everyone makes mistakes. Recovering lost text is a powerful option, but not widely available since it takes up valuable memory space. When it is available, it is usually limited to holding the last deletion only.

EVEN touch-typists make mistakes—the success of "correcting" Selectrics is proof.

Manipulating Text

A piece of writing reaches its finished state by experimenting, adjusting and fine-tuning. Insertions and deletions imitate the editor's blue pencil, but word processing reaches its true potential in "cutting and pasting." To move whole sentences around, to rearrange the order of paragraphs and pages, or to pick them up and move them intact to another document is the power that electronics gives a writer. The approaches vary, but the technique is standard: identify the text, identi-

WHY A FORMS PROCESSING DATABASE?



Ever since the introduction of low-cost microcomputers, business professionals have asked for a system that lets office workers use the knowledge they have and the procedures they already understand.

The solution has arrived. VersaForm now provides you and your staff with a natural way to use a computer—a forms processing database system.

THE IDEAL WAY TO USE A COMPUTER

Just about any form in your office can provide a familiar and easily mastered interface to a personal computer. Simply copy a form to the computer screen and you're set.

BUILD YOUR DATABASE WITH ANY OF THESE FORMS

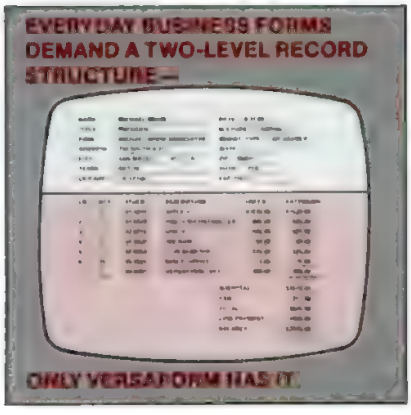
- Bill of Materials
- Client Billing
- Freight Documentation
- Insertion Orders
- Insurance Claims
- Inventory Ledgers
- Invoices
- Job Estimates
- Medical Records
- Personnel Histories
- Project Scheduling
- Purchase Orders

Unlike any other system, VersaForm gets you started on a computer, working the way you're working now . . . you can even use your existing paper forms.

UNIQUELY DESIGNED TO YOUR OFFICE REQUIREMENTS

Most forms have two parts. The form heading contains information that appears only once on each form, like customer name or project number. The transaction region, below, has a variable number of line item entries which might contain quantities, descriptions, unit costs and extensions. These entries require a system that does decimal alignment, tax calculations, subtotals, payments, running balances, and allows you to make changes at any time. Ordinary databases simply can't do it.

All these features and more are yours with VersaForm. A spectacularly useful print formatting capability enhances professional forms management. The magic of print formatting is the ability to produce from a single form in your database, several completely different printed forms. For example, from a patient record you can produce a history chart, an insurance claim, a statement and standard dunning notice.



MANAGEMENT REPORTS IN A HURRY

The real power of a forms processing database is evident with VersaForm's reporting facility. You need only point to the data items within a form you want queried, sorted, counted, subtotalled, and totalled. There's no complicated format to enter—VersaForm automatically produces columnar formats, titled, dated and page numbered.

In just minutes, a detail or summary report is automatically produced. What's more, you can run the report again and again without having to re-enter the instructions.

APPLE II/III IBM PC HARD DISK DATABASE?

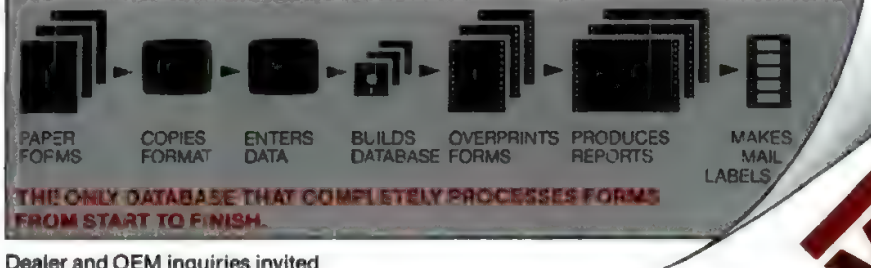
VersaForm supports both floppy and hard disk sub-systems. You can swap data files between different systems through a hard disk-based network. From remote locations data disks can be consolidated into company-wide reports.

OPEN-ENDED SYSTEM.

For special requirements, an optional OEM Pascal Interface provides sophisticated users and software developers with powerful VersaForm tools, allowing direct access to the B-tree indexed database. System integrators can add value by creating templates and writing custom interfaces.

Users say VersaForm is the most powerful and easy to use system around. That's because it's more than just a database; it's a true Business Form Processor.

See VersaForm today at your local computer store.

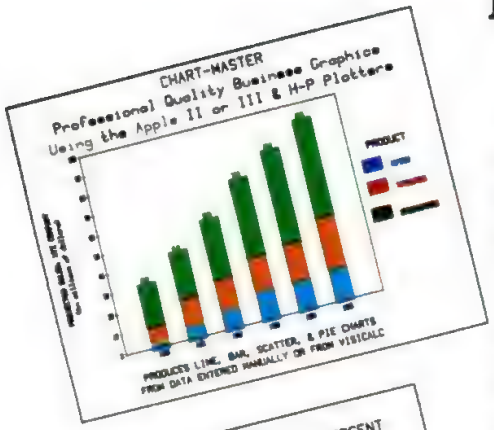


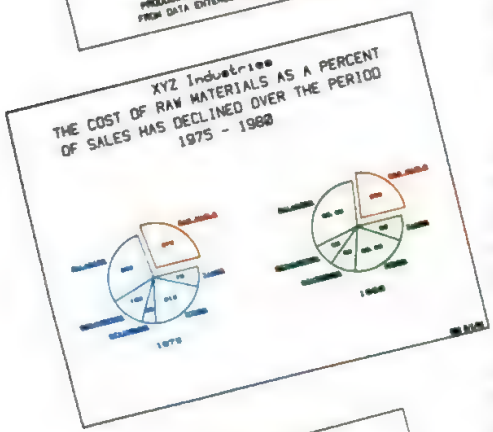
Dealer and OEM inquiries invited

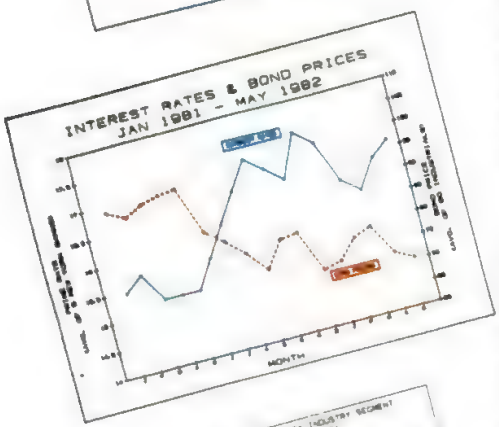
VersaForm™
Business Form Processor

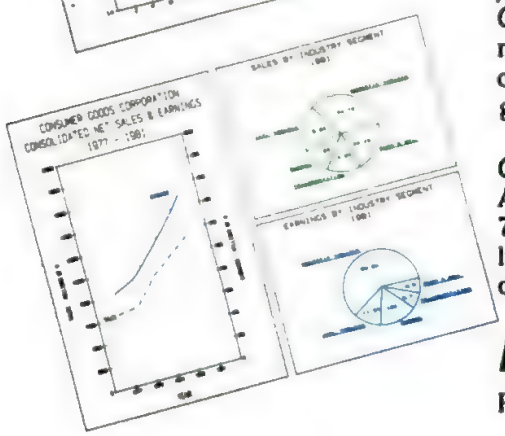
Applied Software Technology
14125 Capri Drive
Los Gatos, CA 95030
408/370-2662

CHART-MASTER™
Business Graphics Software









Professional-Quality Graphics from Personal Computers

CHART-MASTER works with Apple® II, Apple® III and IBM personal computers to create full-color business graphics on Hewlett-Packard plotters, including the new low-cost H-P 7470A.

POWERFUL

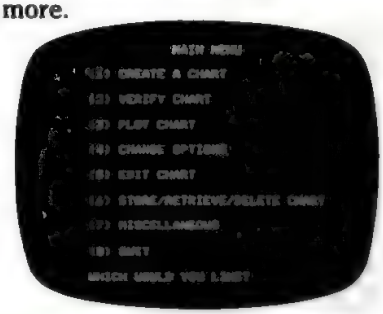
CHART-MASTER produces bar charts, line charts, scatter diagrams and pie charts, as well as text pages and signs, on paper or acetate (transparencies). Data can be entered manually or automatically from Visicalc® and other programs. Charts can be edited, stored and retrieved.

FLEXIBLE

CHART-MASTER allows you to select from a broad range of options to create *the* chart that best communicates your data. Options include producing up to nine charts per page, footnote and framing capabilities, left and right y-axes, a variety of hatching and line types, exploded pie segments, linear regression and curve-fittings, logarithmic axes and much more.

EASY TO USE

CHART-MASTER is an interactive, menu-driven program that allows users, whether managers or secretaries, to produce presentation-quality charts *immediately* with little or no training. It is easy for you to enter data, choose options, select a chart format ... and let *CHART-MASTER* do the rest.



COST-EFFECTIVE QUALITY

To get the same high quality that *CHART-MASTER* delivers, you would have to use expensive time-sharing services, commissioned graphic artists or costly dedicated graphics systems. Thus, *CHART-MASTER*, especially when teamed with the new Hewlett-Packard 7470A plotter, represents a *price/performance breakthrough*. Users of these more costly methods will find that a *CHART-MASTER*/Hewlett-Packard combination pays for itself in just a few months. And, because *CHART-MASTER* also offers convenience, speed, user control and versatility, you will find that you will increase your use of business graphics at no marginal cost.

CHART-MASTER is available through your local computer dealer for $375. A complete graphics plotting package, consisting of *CHART-MASTER*, H-P 7470A plotter and interface for your Apple or IBM personal computer, costs as little as $2000. For further information and the name of your nearest dealer, call or write:

Decision Resources Professional software tools

PO Box 309, Westport CT 06880, 203/222-1974

Apple is a trademark of Apple Computer, Inc.
Visicalc is a trademark of Personal Software, Inc.

fy its destination, and move it.

Usually the cursor is placed at the beginning of the text that will be moved. On some machines, the "beginning" must be the beginning of a sentence or a paragraph. Pressing a function key or CONTROL-key combination labels the text in some way, both internally to the computer and externally to the user, by highlighting it on the screen, for example. Other systems require a marker of some kind to be placed at both the beginning and the end of the block of text to be moved.

The sequence may be reversed by some machines: the function is called up first (MOVE, CUT, etc.), and then the portion of text is identified. On mainframe or minicomputers, a command sequence may be required (for example, ".m" for "move") to tell the computer what to do.

The text will either remain on the screen or be taken off to a scratch file while the writer searches for a place to put it. Every good word processor will permit text to be moved anywhere within the document that it came from, or into any other document on the same disk—if there is room. When the cursor is at the desired place, the writer presses another CONTROL key, function key or command sequence (EXECUTE, PASTE, ".x", etc.) and the text is rewritten there.

A similar procedure is used to copy text, such as addresses on labels, boilerplate paragraphs in a form letter or contract, and so on. The CONTROL key, function key or command sequence differs, but the operation is the same.

THE WORD processor closes up the line like the sea closing over a sinking ship.

When the text is moved or copied to another document, it may not necessarily take format instructions with it, and the moved text may have to be reformatted according to the shape of the text into which it is placed. For example, a verse of poetry, which has line breaks that must be kept intact, will require special attention.

Glossaries or Lexicons

On some systems it is possible to store short phrases in a *glossary* (also called a *lexicon* or *include file*) for swift recall. A return address, standard letter closing, etc., may be needed often enough that it is easier to type a couple of keystrokes to call it out of storage than to rewrite it from scratch each time.

A function key or CONTROL-key sequence is usually required to enter the glossary. The phrase is typed in and assigned a number, acronym or abbreviation (e.g., GL2, ADDR, CLOSE). Then, when it is needed for inclusion, the writer enters the glossary and requests the phrase. It is copied into the text at the cursor position.

A limit is almost always placed on the number of characters or lines in any single glossary entry. Also, the format of the entry is fixed. If your return address is entered single-spaced, with underscoring and line centering like this:

Mary Jones, President
Ultimate Broadcasting Company
12000 Hollywood Blvd.
Los Angeles, CA 99999

then it will not automatically fit in a double-spaced letter where you want it to run on one line (Mary Jones, President: Ultimate Broadcasting Company, etc.). For each potential format, a separate entry would be necessary and the writer must keep a list of glossary numbers or mnemonics in order to remember which represents each entry. Fortunately, many systems also provide scratch files (often called HELP or DIRECTORY) that will keep that information handy.

Search, Global Search, and Replace

Starting at the beginning of this article, find the first occurrence of the word "computer" and replace it with the phrase "electronic digital calculator." Then find each succeeding occurrence, and do the same. If "computer" is underscored, leave it alone, but if it is capitalized, then capitalize the first letter of each word in the new phrase.

What's the matter? Afraid of a little hard work? Word processors do this all the time. When you enter the *search mode* with a function key, CONTROL key or command sequence, the CRT will display a message ("SEARCH FOR WHAT?") or a symbolic prompt. Type in the character, word or phrase that you want to find, and press RETURN, EXECUTE, or whatever key sequence activates the search. The duration of the search depends on the length of the file, the capacity of the disk, and the speed of the CPU; the computer may generate a message ("SEARCHING") to show you that it is not out to lunch.

EVERY GOOD word processor will permit text to be moved anywhere within the document.

If the word is found, the text will scroll to it with the cursor poised for action. On some systems, a search may be undertaken either forward or backward through the text, but on most systems a search proceeds in only one direction—forward from the place where the cursor is. If the whole document must be examined, move the cursor to the beginning of the text before starting the search.

When you want to find *every* occurrence of a string of characters in a file, the process is called *global search*. This is a good way to check for errors, as when you have written "Main Street" instead of "Elm Street." Ask the system to find each occurrence of "Main Street," so you can decide if it should be changed.

In a book about American life, for example, the words "Main Street" may occur almost anywhere. They may begin a sentence, or they may—as in this example—be enclosed with quotation marks. Word processors (being computers) are very literal; you must be explicit about which occurrences of "Main Street" you want it to find. Some systems permit you to find *any* occurrence: capitalized, hyphenated, underscored, etc. Others require that you make a separate search for "Main Street," "Main St.," "MAIN STREET," etc.

If you decide to change "Main Street" to "Elm Street," the computer will do it for you. Enter the *replace mode* in a manner similar to entering the search mode. In some systems, there is a single *search and replace* function. In others you must call

$ Affordable Software, Inc.

P.O. Box 61195. Sunnyvale, CA 94088 / All prices include shipping. / CA residents add sales tax. / Dealer inquiries invited

IBM Pascal or Fortran Programmers: The Forms Designer can save you valuable time in writing your applications programs. The Forms Editor allows you to edit text, draw/erase lines, and define fields. The run time subroutines allow you to access forms or retrieve keyboard entries. The data entry program allows you to test your forms design or retrieve data sequentially.

The Forms Designer™

bit

The Forms Designer	$275.00
Manual & Demonstration Only	$ 35.00

The Forms Designer is a trademark of **Bit Software.**

Mail Route is your best buy for a mailing list package. With the Mailing List program, you can enter names, addresses and phone numbers in free form, just as you would on envelopes. You can customize your mail list with special code field entries for each address. Corrections, additions and deletions are very easy and keep your list current. Search and Sort routines are provided so that you get only the entries you want, in the order you want. Print routines are provided for the printing of master lists, labels or envelopes. Merge List creates personalized form letters using Mailing List files and text files created with Easy Writer or DOS files such as ones created with EDLIN. Both Mailing List and Merge List provide routines to use most standard parallel or serial printers. Requires DOS 1.1 and 64K.

Mail Route™ ver 1.00

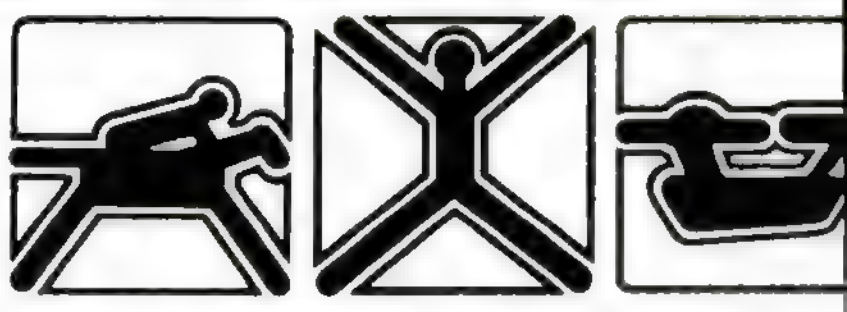
MAIL ROUTE - Both disks, with extensive documentation and tutorials	$75.00
MAILING LIST - Disk, documentation and tutorial	$45.00
MERGE LIST - Disk, documentation and tutorial	$45.00

IBM authorized distributor address list — current as of September 1982, to get your advertising to the right people. Over 400 names and addresses. $35.00

Mail Route is a trademark of **Nehring Associates.**



Funware™ Game Packages



Funware is a trademark of **Affordable Software.** Games require DOS, 64K, and monochrome screen unless otherwise specified.

*** Funware Game Package 1 Music Editor**
Be a maestro at your computer keyboard and compose your own songs. You specify the note, length, tempo, key and octave, then edit your song by changing, inserting or removing notes. You can even merge two songs. Songs may be saved to build your own music library. From **DATAMAN**
$20.00

*** Funware Game Package 2 Horse Race / Hangman**
Enjoy a day at the track without spending money with Horse Race, an animated game with music. Learn about the odds, betting and payoff. Hangman is an animated computerized version of the word guessing favorite. Included are ten libraries of words or create your own. A fun, educational experience for all. From **DATAMAN**
$20.00

*** Funware Game Package 3 Mastermind / Minefield**
Logic puzzles for ages 7-adult. With Mastermind, you challenge the computer by deducing which four of the six possible symbols the computer has chosen and in what order the symbols are arranged. In Minefield, you try to cross the computer's minefield without hitting a mine. The computer takes heart, though, and tells you the number of mines in the surrounding spaces, but not where they are. 32K color or b/w. From **Nehring Associates** $20.00

Funware Game Package 4 Super-Trek
The old crew is there but the ship has really changed! Super-Trek is a fun but difficult-to-master computer game, greatly expanded in features beyond earlier Trek Programs. Command your Starship throughout the galaxy and destroy the evil forces bent upon the destruction of the Federation. Super-Trek comes with the Commander's Guide to Operations. Color or b/w screens.
From **Nehring Associates** $35.00

*** Christmas Special — The above 3 Funware Game Packages $45.00**

IBM is a registered trademark of International Business Machines. EasyWriter is a trademark of Information Unlimited Software.

up each function separately. Initiate the replacement process by the appropriate function key, CONTROL key or command sequence and type in the replacement text ("Elm Street"). The word processor will find each "Main Street" and hold it up, in context, for your consideration. It will request some kind of confirmation from you before changing it to "Elm Street."

If you are sure that every occurrence of "Main Street" is incorrect and that they should all be changed, there is no need to go through the text yourself. Using global search and replace techniques, instruct the word processor to change every "Main Street" to "Elm Street" automatically, and sit back and let the machine do the work. Be careful, however. The machine may change "main street" to "elm street" in this sentence: "Broadway is the main street in New York."

The search and replace operation can get tricky because computers are *literal* to a fault. If you want to change every occurrence of "he" to "she," it is wise to identify the original as "SPACEheSPACE" (" he ") and the replacement as "SPACEsheSPACE" (" she "). Otherwise, you will have to correct such lines as:

"Wshere is tshe tsheater?"sshe asked tshem.

"Shere!" tshey cried.

There are many applications for this power. Spelling conventions (such as "colour" for "color") can be observed in documents intended for readers in different countries, each receiving the home-country spelling. An editor can mark up a printed draft with blue pencil and then go directly to the desired sections of text—bypassing the rest—to edit it. Indexes are easy to construct by searching for all occurrences of a particular word or phrase and noting its place or page. Tables of contents can be built using the search mode to find headings, sub-heads and chapter breaks.

Proofreading

A calculator cannot vouch for the accuracy of the numbers it is "crunching" and a word processor cannot spell any better than the writer using it. If you type "hte adress," a word processor will wrap it, store it and print it exactly as you typed it—completely unaware that you meant "the address."

Spelling and proofreading programs are available, some of which are designed to work with microcomputer word processing software and others which are sold as a package for stand-alone systems. As a rule, such a program includes a list of words and an *algorithm* (formula) for comparing every word in your document with every word in the dictionary. However, there are many ways of accomplishing this.

In some programs the dictionary is small, with only the root words and a few rules in the algorithm for prefixes, suffixes and plurals. This is a fast and generally efficient technique, since "computer" and the suffix "-ize" can be combined to produce "computerize" without having that word itself in the dictionary. But there is a drawback: will it accept "computerly" or "computering"? And what about "mooses"? The plural of "moose" is "moose"!

In other programs, particularly those which are built into stand-alone systems, the dictionary is large and the algorithm searches through it for a word closest to a mismatch from your text. If you have typed "myonaise," the program will suggest "mayonnaise" and may—in some systems—actually correct your text by replacing the word for you. This seems to work well, but caution is advised. If you typed "soarse," did you mean "source" or "coarse"? And if you want your printed text justified, changing the spelling of "myonaise" to "mayonnaise" will add two letters to the line it's on; will that throw off the justification?

SIT BACK and let the machine do the work.

Both of these algorithms work well, but other algorithms require greater concentration on the writer's part. In those, when a word is not found in the dictionary, it is copied into a scratch file and displayed to the writer after proofreading is completed. Then the writer determines whether it is a one-time word, such as a proper name, or a spelling or typographical error. If it is an error, the program will return to the text and mark the word in some way—typically, by changing the first or last character to

STARTING FROM ZERO?

Meet

The INSTRUCTOR™

Whether you are a first time computer user or more advanced, The Instructor can help you master your IBM PC fast.

Individual Software offers The Instructor as a serious, self-teaching interactive tutorial that is fun for office, home and school PC users.

Using revolutionary computer teaching, The Instructor is absolutely the best way to learn . . . about the computer . . . from the computer . . . using the computer. This is one instructor you will enjoy and will give you hours of individualized attention.

The Instructor features:

* In-depth, comprehensive lessons covering interactive operations of your IBM PC
* Individualized, friendly pace found inviting to first time computer users of every age
* Virtually indestructible, has unlimited patience . . . even helpful hints

So get in the know the fun way . . . order The Instructor today and quickly master your IBM PC.

The Instructor is surprisingly affordable at an introductory price of $39.95 plus $1 shipping and handling. California residents add $2.60 sales tax. Send check or money order to:

individual SOFTWARE INCORPORATED

24 Spinnaker Place
Redwood City, CA 94065
(415) 591-4166

Phone inquiries welcome. Requires 64K, PC-DOS, at least 1 drive, and a color or monochrome display.

Expand your IBM PC

Special Factory Rebate Worth $100.00!

Order a 5¼" Winchester hard disk from (PC)² and return your 5¼" floppy Tandon, TM100-2 to us and we will send you a check for $100.00
This offer expires soon - so ACT NOW!

Add-In Winchester Disk System

$1895.00 For 6M Bytes

(PC)²'s Add-In Winchester Disk System is housed within the IBM chassis and is easy to install directly into the floppy slot, reducing desktop space. Also available in 12 and 18 M Bytes capacity.

Memory Expansion Board

$249.00

(PC)²'s Expansion Board offers 4 TIMES the amount of memory offered by IBM. P.C. Configurations can be set at 64K, 128K, 192K and 256K Bytes. Board can be easily upgraded in 64K capacities. Upgradability is the key!

Asynchronous Communications Controller

As little as $85.00

1 or 2 line capability on one card.
Totally compatible with IBM software and diagnostics.

Combination Memory/Asynchronous Controller Board

$319.00

(PC)² high capacity memories are combined on one board with single or double ported asynchronous communications controllers to create the (PC)² Combination Memory Expansion/ Asynchronous Controller Board. (PC)² Combo Boards are fully upgradeable in 64K increments up to the 256K byte board capacity and are configured with support for one or two RS-232C Ports.

Larger quantity pricing is available. For further details call (PC)² Today.

Phone or Write Now! **(408) 749-9313**

(PC)², 510 Lawrence Expressway No. 678 Sunnyvale, CA 94086

Postage and Handling included within continental U.S.A.
One year warranty on all board products
MasterCard, Visa, Checks and C.O.D. accepted.

PLUG COMPATIBLES FOR PERSONAL COMPUTERS

(PC)²

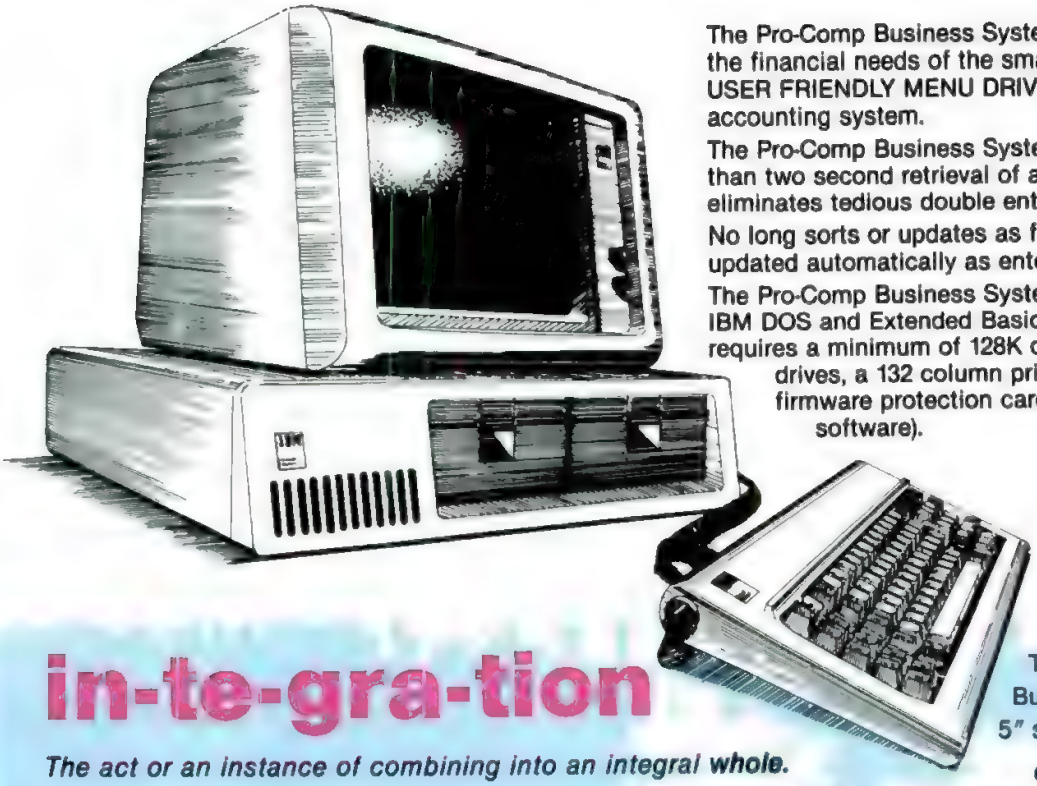
an exotic punctuation mark: "adress" becomes "adres*". Using the word processor's search mode (i.e., search for all occurrences of "*"), the odd words can be located in context, and changed as required. Naturally, this takes longer than automatic replacement, but it gives the writer full control over the text.

A WORD processor cannot spell any better than the writer using it.

In most of these proofreading programs, there is a way to add words to the dictionary. The original dictionary may contain 10,000, 20,000 or 50,000 words, but English alone contains over 100,000 words, and some professions use an additional vocabulary of Latin, medical, or scientific words. A good proofreading program should make it easy to add words, or to create new dictionaries. An attorney, for example, may add about 1,000 legal terms to his main dictionary, and then create a second dictionary for clients' names and street addresses. A chef who is writing a cookbook can have a separate dictionary so that, for example, "au jus" will not be proofread against "at" and "just." A teacher who is writing textbooks for new immigrants may streamline her dictionary to 10,000 basic English words, so that the books will not contain words beyond her students' grasp.

All proofreading algorithms have two inherent limitations. Hyphens are a problem whether they are ignored ("soninlaw") or accepted ("imagin-ation"). The best way around this is to proofread the text before formatting. The other problem is that no algorithm will catch an error if the misspelled word is the correct spelling for another word ("this" instead of "thus"; "if" instead of "of"; "so" instead of "to"; etc.). There is no substitute for sitting down and reading the whole thing yourself. */PC*

Reprinted from Introduction to Word Processing *by Hal Glatzer by permission of Sybex, Inc. Copyright © 1981 by Sybex, Inc. World rights reserved.*



The Pro-Comp Business System integrates all of the financial needs of the small business into a USER FRIENDLY MENU DRIVEN financial accounting system.

The Pro-Comp Business System is faster, less than two second retrieval of any record, and eliminates tedious double entries.

No long sorts or updates as files are sorted and updated automatically as entered.

The Pro-Comp Business System is written using IBM DOS and Extended Basic. The system requires a minimum of 128K of Ram, two disk drives, a 132 column printer, monitor and firmware protection card (supplied with software).

in-te-gra-tion

The act or an instance of combining into an integral ***whole.***
Making up, combining, or completing to produce ***a whole or*** *larger unit.*

The **Pro-Comp** Business System on 5″ single sided diskettes only **$1195.00.**

Accounts Payable
Multiple account dispersion
Automatically takes earned discounts
Produces checks and register

Inventory Control
Includes Point of Sales
Produces re-order report

Payroll
Accepts most deductions
Processes multiple types of pay
Withholds Federal, state and local

Ledger
Fully referenced general journal
Can be up-dated anytime
Comprehensive Profit and Loss statements

Accounts Receivable
Grants earned discounts
Applies interest on past due accounts
Generates bank deposit

pro comp international

Pro-Comp brings integration to the printer buffer.
You simply plug it into any microcomputer with a Centronics compatible parallel interface and immediately expand your output by four.

- Printer selection and online/offline condition is displayed with the use of LED's.
- Pro-Comp's Controller IV uses its own power supply.
- Buffer condition is displayed using four LED's representing one quarter of usable memory.
- Pro-Comp's Controller IV comes standard with 16K of dynamic ram upgradable to 64K.

Dealer and OEM Inquiries Invited



CONTROLLER IV

The Sophisticated Printer Buffer

- 16K Parallel input version ...**$349.00.**

- You now command up to four printers. Controller IV gives you two parallel and two serial outputs.
- Printer selection is switchable or program selectable.
- Pro-Comp will soon be releasing the serial input version of Controller IV.

New Products from Pro-Comp International
Suite B-105
32700 Pacific Hwy. So.
Federal Way, Wa. 98003
(206) 271-1710

TRY OUR WORD PROCESSING SOFTWARE FOR 30 DAYS. IF YOU DON'T AGREE IT'S THE BEST WE'LL EAT IT.



Copyrighted material

UP TILL NOW, CHOOSING A WORD PROCESSOR has been a devil of a task. Especially with so many companies all crowing about the superiority of their wares.

Well, we've changed all that. You're not going to find a better system than our brand new WordPlus-PC.* And we're going to prove it.

HERE'S WHAT TO DO. Call toll-free and order your WordPlus-PC software package directly from us. Load it into your IBM-PC. Then, in the quiet of your own surroundings, judge it for yourself. See how incredibly easy it is to get started. And see how quickly you become a pro at using WordPlus-PC's many powerful word processing features.

THERE'S NO RISK AT ALL. Because if for any reason you're not totally delighted, you can return WordPlus-PC within 30 days for a complete, no-strings-attached refund.* And get a load of this:

WE'LL BUY THE ONE YOU ALREADY BOUGHT. That's how sure we are about our new software. If you already own word processing software for your IBM PC, just send it to us when you decide to keep WordPlus-PC**. *We'll mail you a check for up to $175.*

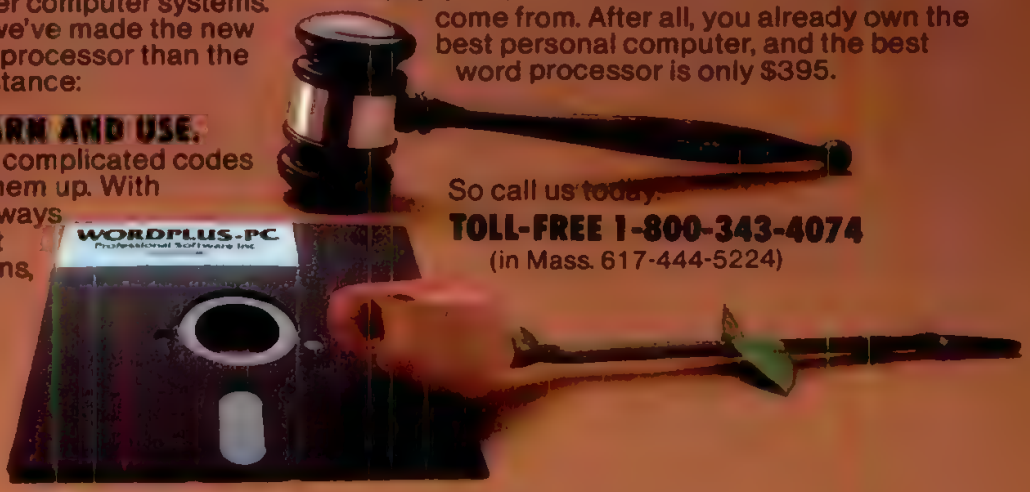
HOW CAN WE BE SO SURE OF OURSELVES? Because we have something most of our competitors don't: over 15,000 satisfied customers happily churning out letters and documents throughout the world on other computer systems. Based on that experience, we've made the new WordPlus-PC a better word processor than the world has ever seen. For instance:

IT'S THE EASIEST TO LEARN AND USE. Nobody wants to memorize complicated codes or constantly have to look them up. With WordPlus-PC, the screen always reminds you how to do what you want. With most functions, one keystroke does it. And there's a built-in HELP function too.

ALL THE FEATURES YOU COULD ASK FOR. WordPlus-PC's many powerful functions include search-and-replace, movement of paragraphs and columns, creating "boilerplate" and multiple personalized letters, 3-line headers and footers, automatic page numbering, and many, many, more. It prints while you're typing. It merges information from other programs. It even displays underlined and boldfaced words directly on your screen as you type. And WordPlus-PC operates on all popular ASCII letter-quality and dot-matrix printers.

PLUS TOLL-FREE ADVICE AND GUIDANCE. We're Professional Software, a leader in word processing software. And we're totally committed to customer service and support. WordPlus-PC comes complete with professionally written, user-friendly materials that self-train you quickly and effortlessly. Backing that up is a staff of fully trained advisors ready to answer your questions when you call our toll-free registered user number. (Try getting that kind of service from any other software company.)

WE STAND OUR CASE; NOW YOU BE THE JUDGE. There's no risk, so there's no reason to wait. Call us TOLL-FREE. Ask all the questions you want, including how much we'll pay you for your old software. When you order, we'll have WordPlus-PC on its way within 24 hours. The trial will be short and cheerful, because once you're sitting in front of WordPlus-PC you'll see in a jiffy where all our confidence and enthusiasm come from. After all, you already own the best personal computer, and the best word processor is only $395.



So call us today.

TOLL-FREE 1-800-343-4074
(in Mass. 617-444-5224)



Professional Software Inc.

"Making Your Computer Smarter and Smarter."

51 Fremont Street, Needham, MA 02194

*Offer applies to software purchased before Dec. 31, 1982.
**Record of purchase must accompany your old software. Certain restrictions apply.
Dealer inquiries invited.
WordPlus-PC was designed and written by Andres Escallon.

TRY SOMETHING GREAT.



We serve the ultimate.

We can turn your friendly little personal computer into a giant. We can take it to its outer limits with our new "RIO" Ultimate Multi-Function card, and all for just $599 (64K) to $999 (256K).

Its 64K-256K RAM is user expandable, parity checked, and totally IBM compatible. It has an RS-232 Serial Port, a Parallel Printer/SASI Disk Controller Port, and a Game Paddle Port that works with both Apple and IBM Joysticks.

Do you already have enough RAM? Try our STB-I/O card with two RS-232 Serial Ports, one Parallel Printer/SASI Port, and one Game Paddle Port for $279. Or do you only need memory? Our affordable RAM card that's user expandable from 64K ($329) to 192K ($599) may be just what you're looking for. All cards are totally IBM hardware and software compatible and offer a one-year warranty.

Are you tired of waiting on your printer? Our new RAM-PRINT™ "SPOOLER" program ($49.95) prints while you continue your next task. FREE with "RIO" and "RAM" card.

It's all in the cards. You can have a lot of computer for a little money with products from STB. We have the experience and technology to help you get the most out of your computer.

Simply The Best.

STB SYSTEMS, INC.

1701 N. Greenville • Suite 703
Richardson, Texas 75081 • 214/234-8750

DEALER INQUIRIES INVITED

• IBM is a trademark of International Business Machines • APPLE is a trademark of APPLE COMPUTER, Inc.

The Strange Case Of Eddie Smith

Part Six.

The personal computer traces its roots back to the Altair computer, first manufactured in January 1975 by MITS, Inc., a small company that came from the desert sands of Albuquerque, New Mexico. For the next 2½ years, MITS, Inc. so dominated this new-found market that the company literally defined personal computing. David Bunnell and Eddie Currie were both uniquely involved in the beginning of personal computing as MITS' vice presidents. Together in this exclusive series they tell the story of The Age of Altair.

Life at MITS was never dull. Each day brought new events and unexpected visitors. The MITS staff had become fairly adept at judging the motives of some of these visitors. One group from San Francisco came to discuss an OEM agreement for Altairs. It wasn't long before the marketing department discovered that this was only a ruse to obtain Altairs at a discount, and the guests were sent on their way. Discouraged, but determined, the visitors retreated to safer ground in the West and decided to manufacture their own "boxes" to be incorporated into systems with software they had developed. At one point someone suggested that they forget the software and just sell the boxes. Thus Imsai was born. With an advanced Altair-compatible computer, the company challenged MITS for the micro crown.

One day Dr. Currie was summoned to appear before Ed Roberts, the supreme commander of MITS, known covertly as "The Big Fromage." "Sit down," said the Fromage with a wry smile. "We may have our first serious personnel problem."

Apparently someone had applied for a job in the shipping department and was told to call back in a day or two. Impatient to see if he was hired, the applicant called the next day and was told that he was unqualified. When he asked for a reason, he got three. First, he was too old. At 31 he was considered a candidate for the old folks home. Secondly, he was too well-educated. Two years of college overqualified him for the shipping department. The third strike against him was his marital status; being married was unforgivable.



Illustration: Stuart Bradford

The applicant couldn't believe it. It seemed the shipping department was looking for illiterate children who were capable of living on minimum wage. Flabbergasted, he did what any red-blooded American would have done. He filed a discrimination charge with the appropriate federal agency, and the Feds came knocking on Ed Roberts' door.

"So what do you think we ought to do?" asked the Fromage. Dr. Currie thought for a few moments and said, "Why don't I interview him. Perhaps we can use him elsewhere in the organization." "Okay, let me know what you decide," Roberts replied optimistically.

Dr. Currie returned to his office and instructed a secretary to contact the recently spurned applicant and invite him back for another round. The next day a well-mannered, handsome man appeared and introduced himself as Eddie Smith. Following a short interview, Dr. Currie was suitably impressed and offered Smith a job as his personal assistant. The surprised young man, who thought he was applying for a job in the shipping department, asked, "Exactly what are my duties?" "Well, your first assignment will be to handle the case of MITS vs. Smith and all the associated paperwork," replied Dr. Currie as he walked out the door.

Once the machinery of government starts moving, it is very difficult to halt it. In the weeks ahead, Mr. Smith was to fill out a myriad of government forms, arrange for interviews by the government investigator assigned to the discrimination case, and prepare documents for MITS' counsel.

Finally the day of the hearing was at hand. Mr. Smith appeared promptly and introduced himself as the complainant in the case. When asked who was to represent MITS, Mr. Smith proudly announced that he was the authorized representative of MITS in these proceedings.

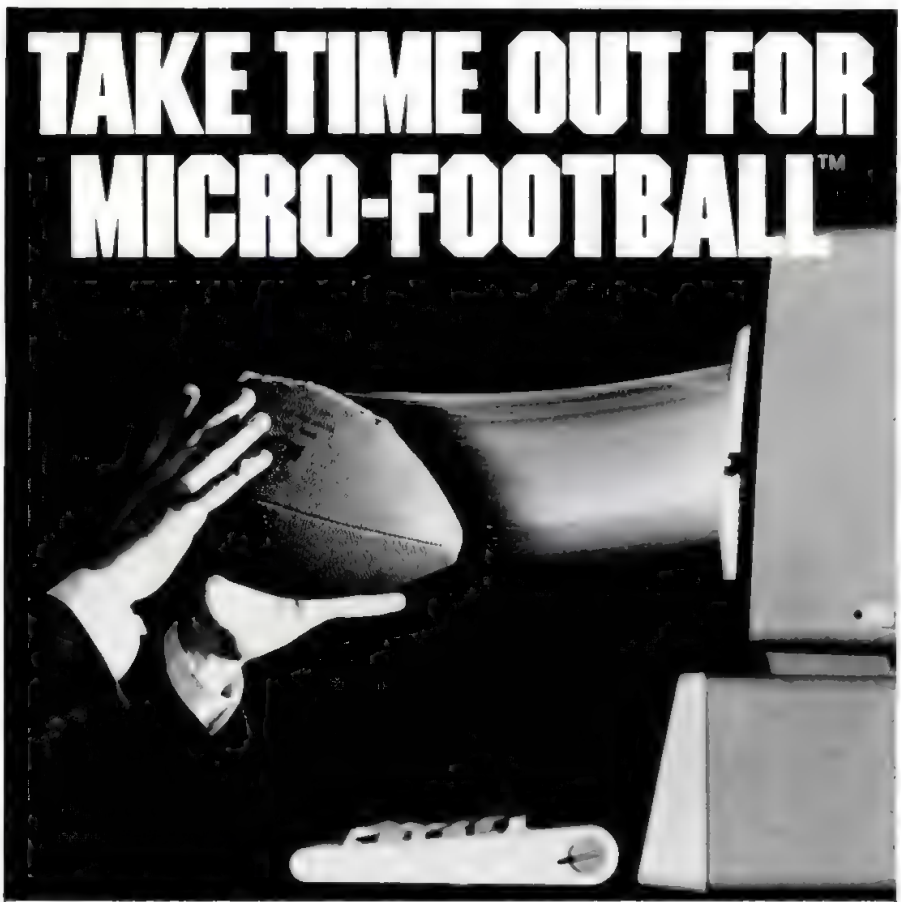
SMITH DID what any red-blooded American would have done. He filed a discrimination charge with the appropriate federal agency.

The room was silent. The federal investigator threw down his papers in disgust and grabbed Smith's arm. "Mr. Smith," he hissed, "we feel like you've changed sides on us!" Eddie shrugged and the case continued. The hearing officer asked, "What does the representative from MITS have to say about the charges brought by Mr. Smith?"

Eddie stepped forward and said with nary a smile, "Well sir, I called myself into my office and asked myself, really asked myself, 'Mr. Smith, are you sure that you want to proceed with this complaint?' After a few moments of reflection, I told myself 'No.' Therefore, as the authorized representative of MITS, I hereby request that this charge be dismissed, and as the complainant, I second the motion."

Ed Smith left the hearing room and returned victoriously to MITS. He could hardly have done otherwise. As Dr. Currie's assistant he would play a key role in future episodes of the Age of Altair. */PC*

TAKE TIME OUT FOR MICRO-FOOTBALL™



MICRO-FOOTBALL™ puts you and your IBM personal computer on the scrimmage line.

You're the quarterback! Choose from 8 running plays or 6 passing routes to move downfield. If you fail to execute, punt!

As the defense, you'll never rest. Not with 4 different defensive alignments you can call.

MICRO-FOOTBALL™ puts you on the field with sound effects and high quality action graphics. You even have a scoreboard and two-minute warning.

MICRO-FOOTBALL™ plays on any IBM PC with 64K, one disk drive, BASICA, and color graphics option.

Sign me up for MICRO-FOOTBALL™ at $29.95.

Name _____

Address _____

City/State/Zip _____

Credit Card # _____

Expiration Date _____

I enclose either a check or VISA/MC number.

WESTWOOD SOFTWARE

1670 N W Emperor Dr Dept PC7 Corvallis, OR 97330

(503) 745-5500 *Dealer Inquiries Invited*

CONTROL DATA
DISKETTES

5 1/4" SPECIFY SOFT, 10 or 16 SECTORS

	PRICE/10	PRICE/50	PRICE/100
SSSD	$23.00	$112.00	$215.00
SSDD	26.00	126.00	235.00
DSDD	32.00	156.00	295.00

8" SPECIFY SOFT or 32 SECTORS

	PRICE/10	PRICE/50	PRICE/100
SSSD	$25.00	$122.00	$223.00
SSDD	30.00	145.00	263.00
DSDD	34.80	165.00	303.00

CALL TOLL FREE - ORDERS ONLY
800-824-7888 ALL STATES EXCEPT CA
800-852-7777 FOR CA RESIDENTS
ASK FOR **OPERATOR #906**

CHECKS, M.O., VISA, M.C., - ADD $2.00 SHIPPING
CA RESIDENTS ADD 6% SALES TAX

Creativity Unlimited
P.O. Box 3304, Saratoga, CA 95070-1304

C COMPILER

For the IBM Personal Computer. The package includes the compiler, with complete installation and operating instructions, and the C source for many standard library functions.

The C compiler is UNIX® ver. 7 compatible. Cross compilers are available for the PDP-11, 6809, and 8080. Full C or C without float is available to meet individual needs.
(UNIX) is a trade mark of Bell Labs.)

C	$200.00
C w/float	$350.00
Cross C	$500.00

TELECON SYSTEMS
90 E. Gish Road, Suite 25
San Jose, CA 95112
408-275-1659

IBM PC Software

SMALL BUSINESS ACCOUNTING.....$59.95
Based on Dome Bookkeeping Record #612, this program keeps track of income, expenditures, and payroll for a small business. Income and expenses can be entered daily, weekly, or monthly. Program computes monthly, through last month, and year-to-date summaries.

MAILING LIST.....$79.95
Maintains mailing lists of up to 1128 names per diskette. Commands allow adding, changing, finding, names, sorting by information in any field, printing labels. Supports 4-line labels of 32 characters per line. Printing on 1, 2, 3, or 4 column labels.

HOME BUDGET.....$59.95
Analyzes your income and expenses and prints monthly and year-to-date summaries showing tax deductions.

DATABASE MANAGEMENT..... $49.95
A simple and easy-to-use program. Define files of any description. Add, change, delete, find records, sort, total items, print file, and save or load on disk.

All programs written in BASIC language and ready to run on IBM PC-DOS. Complete instructions provided for modifying programs to suit your individual requirements.

Documentation to any program can be purchased separately for $15.00.

Howe Software
14 Lexington Road, New City, NY 10956
(914) 634-1821



ELIZA IS HERE!

AT LAST! A FULL IMPLEMENTATION of the original ELIZA program is now available to run on your IBM Personal Computer!

Created at MIT in 1966, ELIZA has become the world's most celebrated artificial intelligence demonstration program. ELIZA turns your computer into a non-directive psychotherapist with whom you can converse much as you would with a live therapist. She analyzes each statement as you type it in and then responds with her own comment or question. Response time is virtually instantaneous, and her remarks are often amazingly appropriate!

Designed to run on a large mainframe, ELIZA has never before been available to personal computer users except in greatly stripped down versions lacking the sophistication which made the original program so fascinating.

Now, our new IBM PC version possessing the **FULL** power and range of expression of the original is being offered at the introductory price of only $25. And if you want to find out how she does it (or teach her to do more), you can buy the complete IBM Disk BASIC **SOURCE PROGRAM** for only $20 additional.

Order your copy of ELIZA today and you'll never again wonder how to respond when you hear someone say, "Okay, let's see what this computer of yours can actually do!"

AVAILABLE ON DISK IN TWO VERSIONS FOR THE PC

1. Protected Version $25
   (Protected Version can be run but not listed or modified)
2. Un-protected IBM Disk BASIC Source Version . . . $45
   (Source Version can be listed and modified as well as run)

Both versions include a six page user manual

Please add $2.00 shipping and handling to the above amounts
(California residents add 6% sales tax)

ARTIFICIAL INTELLIGENCE RESEARCH GROUP
921 North La Jolla Avenue, Dept. P
Los Angeles, CA 90046
(213) 656-7368 (213) 654-2214
MC, VISA and checks accepted

master charge

VISA

COMPLETE IBM PC ACCOUNTING SOFTWARE

Why settle for an expensive accounting system when for only $439 you can have a complete system including payroll? That's right—all four modules (general ledger, accounts payable, accounts receivable, and payroll) for $439.

General Ledger-detailed reports for company and departments comparative financial statements (month, YTD, previous year)

Accounts Payable - current and aged payables, complete vendor/voucher history, check writing, cash flow management reports.

Accounts Receivable - instant customer account information (current and aged) with complete invoicing including open item and statement capabilities.

Payroll - all types of employees. Multiple statements, user modifiable tax tables, W-2 and 941 printing (month, quarter and YTD totals)

Includes **source code**, sample data and user manuals (540 pg.) CA residents add 6½% tax. End users only: system requires 64k, 2 disk drives, DOS and 132 column printer (compressed mode OK). IBM PC, MS DOS are trademarks of IBM Corp. and Microsoft respectively.

A Proven Product • Sold Nationwide • Technical Support by Telephone

ORDER BY PHONE or MAIL
TELEPHONE ORDERS CALL (415) 625-1592
VISA, MASTERCARD, C.O.D., Check • Orders Shipped Next Day

ROCKY MOUNTAIN SOFTWARE SYSTEMS
1280-C NEWELL AVE., SUITE 147 • WALNUT CREEK, CA 94596
(415) 625-1592
MICROCOMPUTER SOFTWARE AND SYSTEMS

IBM Personal Computer SOFTWARE

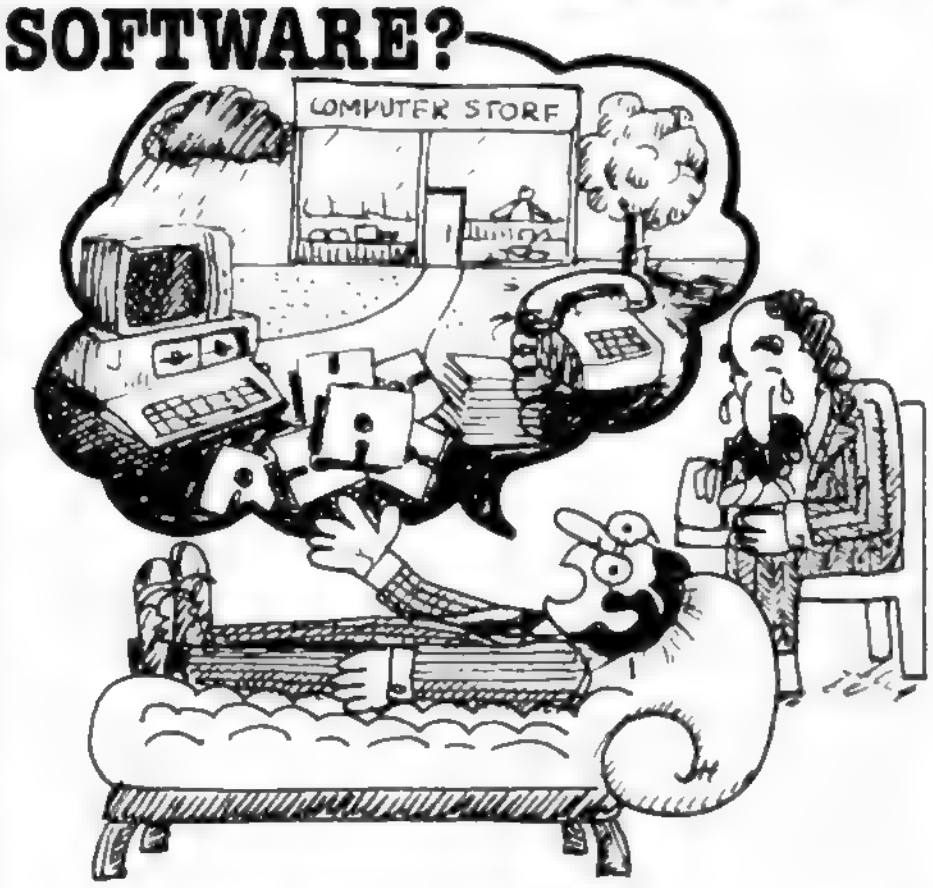
- ★ Balance-Forward Accounts Receivable
- ★ Open-Item Account Receivable
- ★ Cash Flow Statements
- ★ Contractor Job Costing
- ★ C.P.A. General Ledger
- ★ Accounts Payable
- ★ Payroll

All programs run with IBM Personal DOS
Demo Diskette & Documentation $75.00
(Applies towards purchase price.)
$485.00 Each

COMPUTER SYSTEMS DESIGN, INC.

P. O. Box 735 • Yakima, WA 98907
1-509-575-0320

LOOKING FOR IBM PERSONAL COMPUTER SOFTWARE?



Let us help you. Write for free IBM Personal Computer software catalog.

UCI COMPANY Suite 1092 D
15445 Ventura Boulevard
Sherman Oaks, CA 91413

© UCI Company, 1982

NF SYSTEMS

● Master your PC with our new design aids:

FILE MASTER A comprehensive disk file maintenance program using full screen displays. Creates reports by any field. Supports VISICALC® files! **99.95**

TEXT MASTER A document formatter which offers 40 commands to customize text. Includes indexing and table of contents capabilities! **99.95**

SCREEN MASTER A fantastic utility for BASIC programmers – defines full screen displays for input/output, supports all keys, colors, and allows field protection. **79.95**

COMPARE MASTER A file comparison utility using multiple parameters for compare, and sending display to screen or printer. **34.95**

SORT 80 An assembler sort subroutine, callable by a BASIC program. Variable length fields. FAST! **34.95**

DISKETTE CATALOG Create a master catalog of all your diskettes! If PC - catalog is created from disk. For other diskettes, enter from keyboard. May change and/or search for a particular file. **A must!** **34.95**

● Master your household with:

HOUSEHOLD AIDS Includes Household Inventory, Personal Statement, VCR Index, Resume, Name/Address/Phone. **49.95**

CHECK REGISTER Up to 40 ledger/budget headings. Print Check Register or Totals by ledger/by month. **39.95**

STOCK PORTFOLIO Keep all transactions by company name and date. Print entire portfolio or transactions by month or year. **39.95**

NF SYSTEMS, LTD.
P.O. Box 76363
Atlanta, GA 30358

Catalog Available

IBM Personal Computer

To order, call collect 9-5 404-252-3302

Buy the BEST for LESS



BusinessMaster Plus is one of the most comprehensive and professional business and accounting packages available. The General Ledger for example was designed around the IMS format to fit the requirements of a major New York based accounting firm. The Fixed Asset accounting package was designed to fit the needs of a San Francisco based financial investment house. Together the General Ledger, Payroll and Fixed Asset accounting package provide one of the finest Client writeup packages available at ANY price.

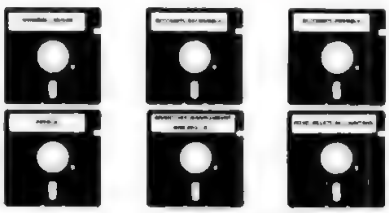
The package includes General Ledger, Payroll, Fixed Asset Accounting, Accounts Receivable, Accounts Payable, Inventory and a Mailing List package. These are all implemented under FULL menu control, integrated, and provide for data entry from fully formatted, fill-in-the-blanks data entry screens.

Most importantly, we have incorporated FAST from Computer Controls in Largo, Florida as a Fast Access Balanced Tree file indexing system to allow for rapid access to records by KEY rather than record number. The result has to be seen to be fully appreciated. We know of no other accounting package that offers these indexing!!!

We've been told by numerous people that this package should sell for at least $5000 but we prefer to take the position that we'd sooner sell 10,000 copies at $289 than 100 at $5000. Actually we think we'll sell a LOT more than 10,000!

(We still have BusinessMaster II + available at $199.)

BusinessMaster Plus



Available for

All 8" CP/M, CBASIC2 computers including S-100 bus, TRS-80 Mod II, Xerox 820 and others.

Also available for many 5¼" CP/M, CBASIC2 computers with 80 x 24 displays and 64k of memory including Apple II, Xerox 820, Heath, Zenith, Kaycomp II, Superbrain and IBM PC with Baby Blue. Available soon under CBASIC86.

The BusinessMaster Plus package includes:
1- Over 700,000 bytes of compiled code on appropriate diskettes OR at extra cost over 1,300,000 bytes of source code on appropriate diskettes packaged in a library box.
2- An easy-to-use, menu oriented user manual (over 250 pages.)

Send $289 for BusinessMaster Plus

BusinessMaster Inc. 4317 Sea Bright Dr. Carlsbad, CA 92008
Order and Technical Number (714) 434-6168

Name _____
Address _____
City/State/Zip _____
☐ Visa ☐ Mastercard
Number _____ Expires _____
Your System _____
Disk Size ☐ 8" single density ☐ 5¼"

Dealers, Distributors and Manufacturers Inquiries Welcome.

THE CATALOG FOR IBM MODERN TIMES®



Our thirty page catalog contains a full selection of hardware accessories and software for your IBM PC or Columbia MPC system. Complete descriptions and full discounts.

SEND TWO DOLLARS TO:

COMPUTER SPECIALTIES
1253 BROADWAY
EL CAJON, CA 92103

PERSONAL MAILER

The professional mailing list database program with the "personal" touch for the IBM Personal Computer, offers you these features:

- password protection
- all data field lengths may be defined
- searches or sorts up to 12 fields
- creates sub-files by search or sort options
- each entry automatically date-stamped
- multiple files may be used and defined
- "crunch" routine to free up disk space
- contents of labels defined at print time
- prints optional single labels at entry time
- prints labels 1, 2, 3, abreast by sort keys
- prints address or phone directories
- use with word processors, spelling checkers, etc.
- even finds misspelled names in a flash!
- and much more!!

Requires: PC-DOS, 64K, 1 Disk, 80-column display

Order your copy today for just $65.*

COMPUTER AGE OF SAN FRANCISCO

825 Masonic Avenue, Suite 6
San Francisco, CA 94117 • 415/921-7792

*CA residents please add 6.5% sales tax. COD orders please add $5.00 shipping charge. Please allow 2-3 weeks for personal checks to clear.

Personal Mailer is a trademark of Computer Age.
IBM Personal Computer is a trademark of IBM.

PERFIN

THE VERSATILE PERSONAL FINANCIAL PROGRAM.

PERFIN lets you keep track of all your financial information easily. PERFIN doesn't require special knowledge of accounting or computers yet offers a full range of features:

- Checkbook program with query and balancing features
- User-defined accounts for total flexibility (eg. tax data, credit cards, etc.)
- Budget program to help analyze and control where your money goes
- Reports and bar-graphs on both screen and printer
- Full editing features
- Simple start-up with the included configuration program

PERFIN is available now at the low price of **$65.00** for diskette and manual.

Requires IBM PC*, PC-DOS* 1.0 or 1.1, 64K, 1 disk, monitor (printer optional)

DIGITAL ENGINEERING GROUP, INC.
11999 KATY FREEWAY, SUITE 150
HOUSTON, TEXAS 77079
(713) 531-6100

Bank cards accepted. *Copyright IBM

** DEALER INQUIRIES INVITED **

NOW! **IBM Selectric®-Quality Printing from your IBM Personal Computer!**

IBM®



Why settle for less? Here's a top-quality IBM electronic typewriter equipped with the famous IPEX ELF interface, ready to plug into your IBM Personal Computer to print letters, reports, or data. No special software is needed. And you can use it as a stand-alone correcting typewriter anytime you wish. This amazing machine has dual pitch plus proportional-spacing, and electronically aligns numbers, indents, centers, tabs, and underscores.

Every typewriter has been detailed to sparkling like-new condition in the IBM factory and is eligible for service or maintenance agreement from any IBM service location in the U.S.

The perfect all-around printer system for your IBM Personal Computer is priced at only $1695. (Computer cable $30 additional.)

P.S. If you already own an IBM SELECTRIC or IBM Electronic Typewriter, you can easily add the IPEX ELF interface unit to work with most popular computers.

To order, or for more information, call or write, today.

* We export to all countries *

IBM and the word SELECTRIC are registered trademarks of the IBM Corporation.

IPEX

(213) 710-1444

IPEX INTERNATIONAL, INC.
5115 Douglas Fir Road
Calabasas, CA 91302 U.S.A.

Telex/TWX 910-494-2100

$80.88

Stackworks Forth is more than a language– it is a complete approach to PC software development. A full, extendable interpreter-compiler producing compact code, Stackworks Forth is as fast as compiled Fortran, as easy to use as interactive Basic.

Completely I/O compatible with DOS or CP/M-86, including standard op-system file editor, Stackworks Forth is a simple, self-contained, stack oriented system allowing high level development and instantaneous debugging and modification of complete end user oriented programs. Immediate testing capability makes Stackworks Forth ideal for PC applications including robotics, process control, hardware development, video game design. . . .

A complete software development package including editor, debugger, tutorial. Stackworks Forth Version 2.0 . . . $80.88.

MasterCard, Visa, Amex
1414 E. University
Bloomington IN 47401
800 457 4544

stack works

IBM PC!

REPAIR YOUR DISKS

A UTILITY TO:

- Put files on disk by track or by sector
- Set files to hidden, system or normal status
- Show hidden or erased files
- Add or change the directory

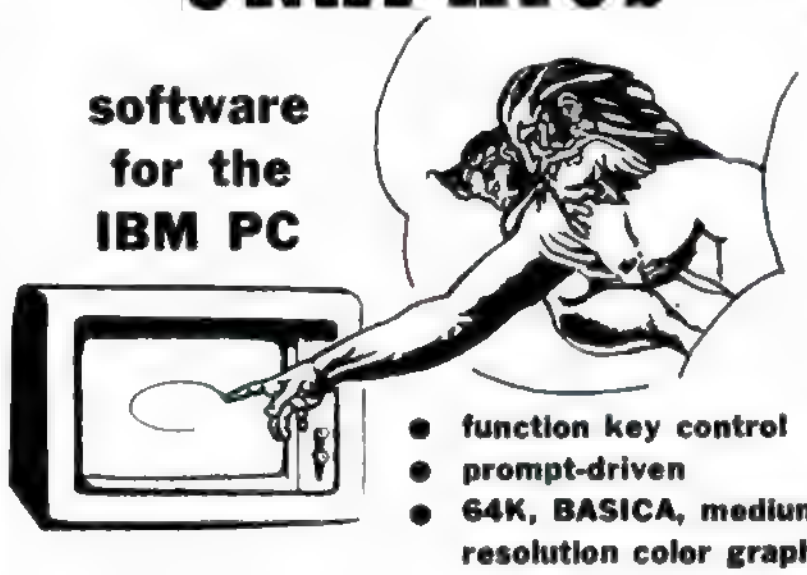
Send **$59.95** check or money order

Mass residents add 5% sales tax

SQUIRE BURESH ASSOCIATES INC.
4 E. Central Street Suite 2029
Worcester, MA 01613
(617) 832-6430
MASTER CHARGE/VISA Accepted

CREATIVE GRAPHICS

software for the IBM PC



- **function key control**
- **prompt-driven**
- **64K, BASICA, medium resolution color graphics**

Supreme drawing power for both novice & expert!

- create & store designs
- edit details
- mix text and graphics
- define symbol library
- copy, move, rotate areas
- painting mode

Order your CREATIVE GRAPHICS package now for just $139.95

CREATIVE GRAPHICS*
84 Great Valley Parkway, Malvern, PA 19355
(215) 296-7376
*a division of ACCUPIPE Corporation

8" DISKETTE FOR IBM PC

The 8" diskette is a universal standard for saving and interchanging data and programs between computer systems. We have developed a modification to the IBM diskette controller card and over ten utility programs that enable the user to interface his IBM PC to other computer systems including all IBM models such as the 3741, S/1, S/23, S/34, S/38, Displaywriter, TRS80 Model II, DEC, NCR, Honeywell, Univac and CP/M systems. One or two sided, single (FM) or double (MFM) density recording with 128, 256, 512, or 1024 bytes/sector is supported. The utility programs can copy files between the PC and hundreds of different systems using IBM data interchange, a CP/M file directory, or by specifying the starting and ending file sector numbers. Automatic ASCII-EBCDIC conversion is provided. The system can also be used as a 1.2 Mbyte drive to backup a hard disk or as a regular DOS drive for files.

The complete system price including enclosure, drive, cable, and all utility programs is $1295. An optional 240VAC 50HZ or 115/240VAC DC version is available for an additional $70. For users that want to use their own drives, the programs and documentation are available for $695. Payment is by check or COD with delivery within 10 days. Size is 9" x 5" x 19" —weight is 25 lbs.

Contact: Dennis White (602) 774-3588

FLAGSTAFF ENGINEERING
2820 West Darleen • Flagstaff, Arizona 86001

DEC VT100-VT52 TERMINAL EMULATION FOR THE IBM PC

The finest personal computer now emulates the finest computer terminal! Whether you are timesharing to a DEC host or simply need a superb ASCII terminal emulator for your PC, Saturn's VT100-VT52 emulator is for you.

- Written in assembler for maximum efficiency
- 15 communication speeds up to 9600 baud
- Print screen, copy to printer and print through mode
- Output to printer can be redirected to diskette
- Full VT100 keyboard emulation
- EDT, TECO, DECWORD and WORD-11 compatible
- User-friendly set-up mode
- Selectable XON-XOFF protocol
- Split screen, bidirectional scrolling
- Blink, bright, reverse-video and underline attributes
- Full screen reverse video
- Direct connect or by modem
- PC-Host file exchange software available

And many other features that make this the finest and most easily used terminal emulator available.

SATURN CONSULTING GROUP, INC.
147 WEST 26TH STREET
NEW YORK, NY 10001
CALL: (212) 675-7753

PLUG OUR LIGHT PEN INTO YOUR IBM PERSONAL COMPUTER

Symtec's Light Pen:

- Plugs into IBM's Color/Graphics Adapter card and generates X and Y coordinates, pen switch function.
- Includes 15 easy-to-type-in software programs such as menu selection, interest calculation, CAI. And, it can be used to paint, draw lines, circles, dots and boxes — even create sound.
- Has a slim, stainless steel barrel, coiled cord, touch-ring* and plug-in connector.

*Push-tip available on special order through your dealer.

Available at your local Computerland Dealer

SYMTEK®

15933 W 8 Mile Rd., Detroit, MI 48235
(313) 272-2950

GRAPHICS UTILITIES

GRAPH-PRINT
For printing a graphics screen ▪ use with BASIC, IBM Pascal or FORTRAN ▪ positive or negative image ▪ normal or compressed image ▪ high speed machine language ▪ Epson printer with Graftrax, and an IBM Color Graphics Adapter Card required $29

SUPPORT LIBRARY
Extensions to Pascal and FORTRAN ▪ cursor control ▪ multiple text pages ▪ string output ▪ attribute control ▪ inkey function returns ASCII and scan codes for using cursor and function keys ▪ reads light pen position ▪ all routines are in machine language and can be used in graphics or text modes ▪ order SUPPORT LIBRARY in Pascal or FORTRAN $49

GRAPHICS LIBRARY
Graphics procedures for Pascal and FORTRAN ▪ all graphics commands supported in IBM BASIC are implemented for use with IBM Pascal or FORTRAN ▪ DITHERED colors in fill and paint commands allow 10 colors in medium resolution graphics and 3 colors in high resolution graphics ▪ specify Pascal or FORTRAN when ordering $95

For more information, or to place an order, contact
FAST-LANE COMPUTER PRODUCTS
5600 Roosevelt Way NE, Seattle, WA 98105
(206) 271-2586

Now that you have the best personal computer, you want the best data management system.

You now own an IBM Personal Computer. Naturally you want the very best data management system to match the quality of your computer.

We at The Computer Workshop believe that we have developed such a system. Why? Because The Computer Workshop Data Management System (TCW/DMS) was designed **specifically** for the IBM Personal Computer.

TCW/DMS is easy to use, flexible and extremely powerful. We believe that it offers excellent value for your money.

Please call or write us for more information about TCW/DMS. We feel sure that you'll find the system is indeed the best data management system for your IBM Personal Computer.

TCW/DMS
The Computer Workshop Data Management System for the IBM Personal Computer

THE COMPUTER WORKSHOP
Computer Software that Works to Save You Work
322 Sheiden Avenue/Houghton, Michigan 49931/(906)482-8009

SEVEN GOOD REASONS TO BUY SOFTWARE FROM DATAXEASY

☐ **EZ•SCREENAID** Simply key in the screen as it is to appear and "enter" Screen is saved on disk for use in programs, the hard copy shows input locations. **48K/1 drive. $45.**

☐ **EZ•MAILLABLE** Print the whole list or select on up to 15 attributes! Print in **any** sequence. Use small, standard or oversized labels. Print 1, 2 or 3 up. **48K/2 drives. $95.**

☐ **EZ•UTILITIES** Great for debugging and time saving. Display, edit or list files easily. Other useful programs included. **48K/1 drive. $75.**

☐ **EZ•MAILSALES** Ideal for recording mail-order sales. Items/rates can be stored or 1 time. The Tax & Sales Report shows federal and state tax obligations. The serial # field can be used for software (or similar) sales control. **48K/1 drive. $95.**

☐ **EZ•RETAIL** Turn your personal computer into a cash register. Improve customer relations by reducing the time required to write retail sales. The item lookup feature displays the description, cost, normal list price, inventory and sales price. Also handles 1 time product sales. Update of inventory is automatic. Reports provide analyses of sales, credit card charges, commissions and taxes. **48K/2 drives. $245.**

☐ **EZ•TIMEBILL** Send custom looking billing to your clients in record time. Text can be stored or 1 time (up to 120 char.). The client lookup retrieves address and credit limit. Reference lookup can be used to override a billing rate in the text record. **48K/2 drives. $225.**

☐ **EZ•TELEPHONE** Keep track of name, address, 2 phone numbers, personal notes and a special date. **48K/1 drive. $25.**

DATA CONSULTING GROUP
877 Bounty Drive, Suite EE203
Foster City, CA 94404

CA add 6.5% tax
Dealer inquiries welcome

PC UTILITIES

SUPER ZAP
A menu driven utility that allows *Full-Screen* access to *every sector* on disk. Sectors may be accessed by a file or absolute sector number. Data is displayed in *Ascii*, and in *Hexadecimal*, *Decimal*, or *Octal*. Powerful 'GOTO' commands move you rapidly through files or disk. Configuration options provides user customization. Best of all there are *No* difficult commands to remember; function keys are used exclusively. **$45.00**

PC TOOLBOX
A collection of utilities, all with completed documentation.
- Extended directory — formats file names horizontally, display halts when screen is full. Space Information about files on disk given in DOS allocation units.
- Monitor — Allows dynamic switching between monochromatic and color adapter monitors.
- List — Outputs contents of file directly to printer with forms, tab and printer controls.
- Clock — Continuous display of time on monitor screen.
- File Utility — Recovers deleted files. Removes and assigns "hidden" attributes to selected file. **$35.00**

All programs support standard IBM PC configurations.
Send for free brochure • Phone orders accepted • Please add $2.00 for shipping and handling.

Alta Systems, Inc.
P.O. Box 9802
Suite 181
Austin, Texas 78766
(512) 836-7351

MasterCard VISA

SALE SPECIAL

SMITH CORONA TP-1

DAISY WHEEL PRINTER



CALL FOR PRICE

- FULL LETTER QUALITY
- 144 WORDS PER MIN. (12 CPS)
- PARALLEL OR RS-232C SERIAL (SPECIFY)
- LOAD PAPER LIKE TYPEWRITER
- POPULAR WHEEL FONT TYPES
- NATIONAL SERVICE ORGANIZATION

COOSOL, INC.

P.O. Box 743, ANAHEIM, CA 92805-0743
CALL: 7 DAYS CALIF. (714) 545-2216
(800) 854-8498

Attention, IBM Pascal or FORTRAN programmers,

The Forms Designer™

can save you valuable time in designing your formatted screen I/O. The interactive Forms Editor allows you to draw lines and boxes, define fields, and edit text. The Forms run-time subroutines allows you to access forms or read keyboard entry by writting only one line of code. The data entry program provides sequential data retrieval and storage.

Requires 128KB RAM, monochrome or 80 column Color, DOS, IBM Pascal, FORTRAN or Assembler.

forms designer	$275
Data entry	75
Demo & manual	35

BIT Software™
P.O. Box 619
Milpitas, CA 95035
(408) 262-1054

ONE GOOD NAME DESERVES ANOTHER

iai

IBM

- **Precision programmed for IBM, exclusively.**
- **Human engineered by microcomputer specialists.**

DMS • $150

Personalized data management for non-programmers. Allows construction of forms plus retrieval, modification, and reporting of data. Files readable by BASIC, etc. Completely self-prompting and menu driven. No previous knowledge of programming or data processing required.

WINDOW • $150

A full-screen text editor for the IBM PC. Speedy, sure single-keystroke control. Designed for the IBM keyboard so using it comes naturally.

C88 • $250

Compiler, linker, and subroutine library for an extensive subset of the C language. Compiles at over 500 lines/minute.

Manuals $10 (applicable towards product purchase).
Other programs available. Write for free brochure.

IBM is a registered trademark of International Business Machines.

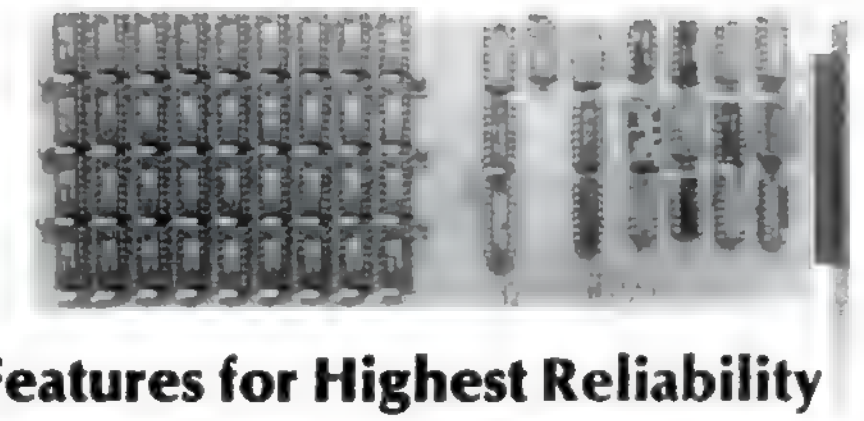
iai intellect associates inc. P.O. Box 365, HOLBROOK, NEW YORK 11741

256K - $429

Expansion Memory for the IBM PC

Introductory Price Fully Assembled & Tested

This is a High Quality Product



Features for Highest Reliability

Burned-in for 72 hours
Beryllium-copper sockets
One year warranty
Parity generation & checking
1mf bypass cap./64K chip
7 day return policy

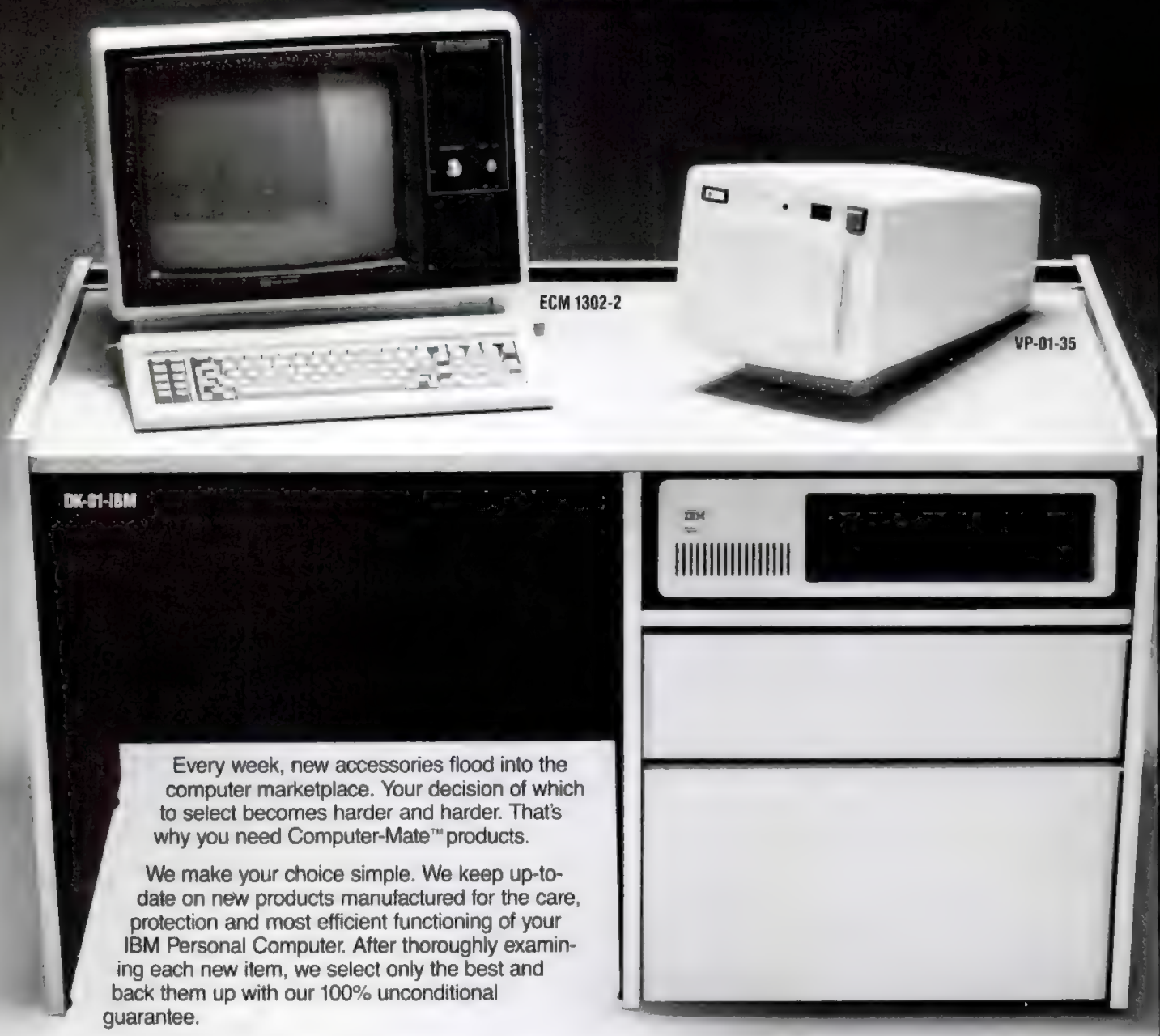
A&T 64K bytes	$249	A&T less RAM	$189
A&T 128K bytes	$299	Bare PC board	$49
A&T 192K bytes	$359	64KB expansion kit	$57

7 day return policy

Terms: UPS CASH, COD, M/C or VISA

MICROPROCESSORS UNLIMITED
24,000 S. PEORIA AVE.
BEGGS, OK. 74421
(918) 267-4796

Our Best To Your Personal Computer. Complements From Computer-Mate.™



Every week, new accessories flood into the computer marketplace. Your decision of which to select becomes harder and harder. That's why you need Computer-Mate™ products.

We make your choice simple. We keep up-to-date on new products manufactured for the care, protection and most efficient functioning of your IBM Personal Computer. After thoroughly examining each new item, we select only the best and back them up with our 100% unconditional guarantee.

When you've made a personal investment as comprehensive as an IBM Personal Computer, give it the best. Complements from Computer-Mate.™

Your personal computer deserves personal attention.

Computer-Mate, Inc.

SALE SPECIAL

SMITH CORONA TP-1
DAISY WHEEL PRINTER



CALL FOR PRICE

- FULL LETTER QUALITY
- 144 WORDS PER MIN. (12 CPS)
- PARALLEL OR RS-232C SERIAL (SPECIFY)
- LOAD PAPER LIKE TYPEWRITER
- POPULAR WHEEL FONT TYPES
- NATIONAL SERVICE ORGANIZATION

COOSOL, INC.

P.O. Box 743, ANAHEIM, CA 92805-0743
CALL: 7 DAYS CALIF. (714) 545-2216
(800) 854-8498

Attention, IBM Pascal or FORTRAN programmers,

The Forms Designer™

can save you valuable time in designing your formatted screen I/O. The interactive Forms Editor allows you to draw lines and boxes, define fields, and edit text. The Forms run-time subroutines allows you to access forms or read keyboard entry by writting only one line of code. The data entry program provides sequential data retrieval and storage.

Requires 128KB RAM, monochrome or 80 column Color, DOS, IBM Pascal, FORTRAN or Assembler.

forms designer	$275
Data entry	75
Demo & manual	35

BIT Software™
P.O. Box 619
Milpitas, CA 95035
(408) 262-1054

ONE GOOD NAME DESERVES ANOTHER

iai

IBM

- **Precision programmed for IBM, exclusively.**
- **Human engineered by microcomputer specialists.**

DMS • $150

Personalized data management for non-programmers. Allows construction of forms plus retrieval, modification, and reporting of data. Files readable by BASIC, etc. Completely self-prompting and menu driven. No previous knowledge of programming or data processing required.

WINDOW • $150

A full-screen text editor for the IBM PC. Speedy, sure single-keystroke control. Designed for the IBM keyboard so using it comes naturally.

C88 • $250

Compiler, linker, and subroutine library for an extensive subset of the C language. Compiles at over 500 lines/minute.

Manuals $10 (applicable towards product purchase).
Other programs available. Write for free brochure.

IBM is a registered trademark of International Business Machines.

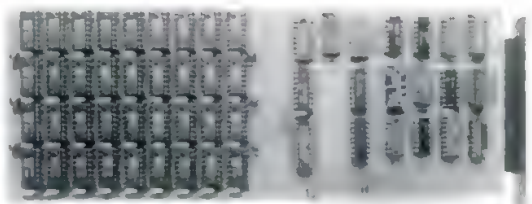
iai intellect associates inc. P.O. Box 365, HOLBROOK, NEW YORK 11741

256K - $429

Expansion Memory for the IBM PC

Introductory Price Fully Assembled & Tested

This is a High Quality Product



Features for Highest Reliability

Burned-in for 72 hours
Beryllium-copper sockets
One year warranty
Parity generation & checking
1mf bypass cap./64K chip
7 day return policy

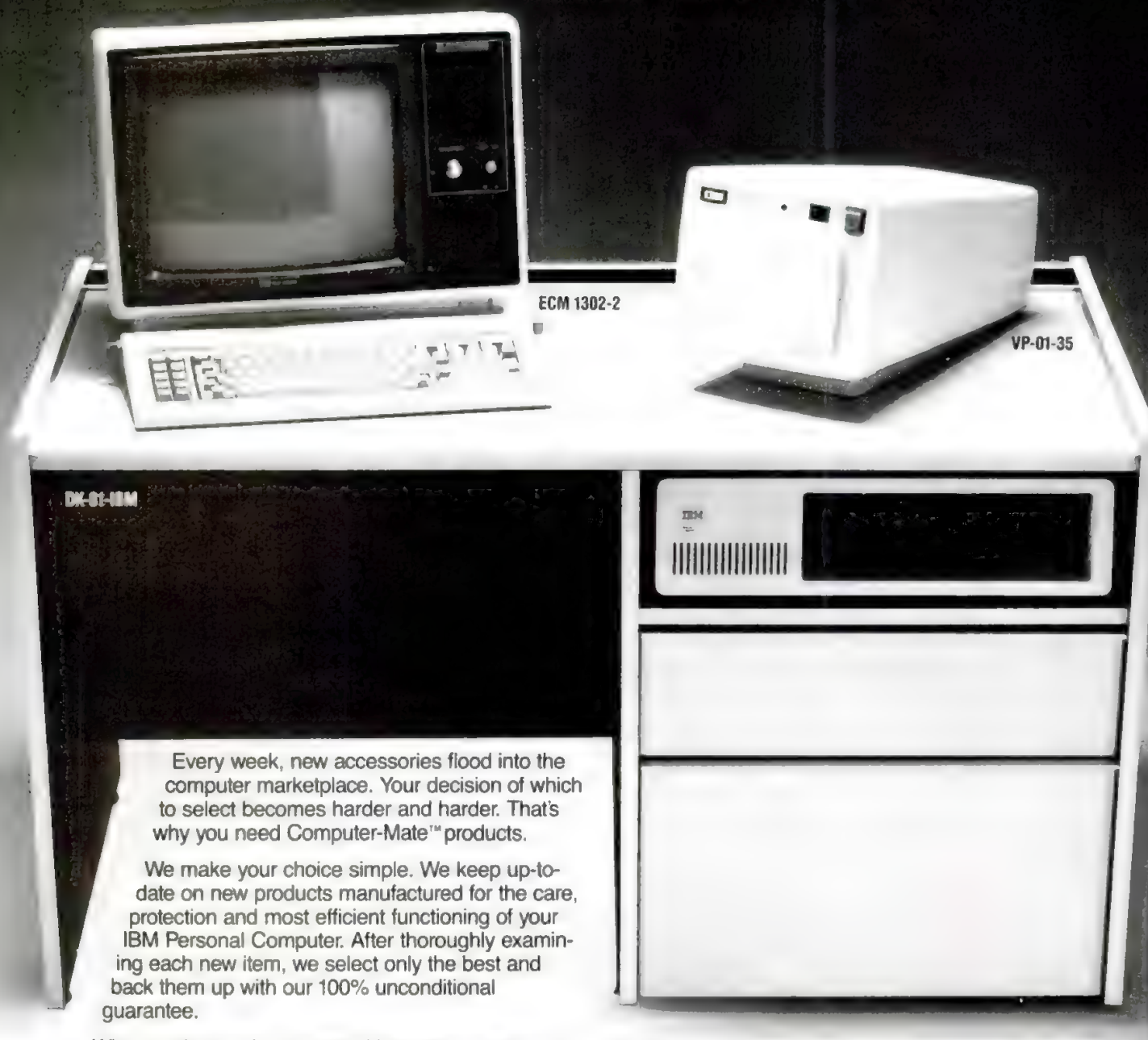
A&T 64K bytes	$249	A&T less RAM	$189
A&T 128K bytes	$299	Bare PC board	$49
A&T 192K bytes	$359	64KB expansion kit	$57

7 day return policy

Terms: UPS CASH, COD, M/C or VISA

MICROPROCESSORS UNLIMITED
24,000 S. PEORIA AVE.
BEGGS, OK. 74421
(918) 267-4796

Our Best To Your Personal Computer. Complements From Computer-Mate.™



Every week, new accessories flood into the computer marketplace. Your decision of which to select becomes harder and harder. That's why you need Computer-Mate™ products.

We make your choice simple. We keep up-to-date on new products manufactured for the care, protection and most efficient functioning of your IBM Personal Computer. After thoroughly examining each new item, we select only the best and back them up with our 100% unconditional guarantee.

When you've made a personal investment as comprehensive as an IBM Personal Computer, give it the best. Complements from Computer-Mate.™

Your personal computer deserves personal attention.

Computer-Mate, Inc.

VIDEO FILM RECORDER BY COMPUTER-MATE™ VP-01-35

Now, quickly convert your computer graphics to 35mm slides or prints.

An extremely economical and professional device. Provides the user of the IBM Personal Computer with the ability to quickly and automatically produce presentation quality 35mm slides or photographic prints. Completely automatic, including film advance and rewind. One convenient size: 7½" x 9⅝" x 17⅝".

Easy to operate. No special knowledge of computers or photography is necessary. With a push of a button you'll have a sharp slide or photo of your computer's video display. Update or revise each slide at any time by computer—a snap to use with minimal adjustments. The Video Film Recorder is an economical way to enhance the impact of any slide presentation.

This device uses standard 35mm slide film that can be processed at any local photo lab or store. Its sleek, modern design is color coordinated with the IBM System. The unit is also compatible with a variety of other personal computers.

VP-01-35 $2,495.00 OEM and Dealer pricing available. Prices include 35mm film system with autowind. TTL RGB interface (IBM Personal Computer). All prices FOB Dallas, Texas. Prices subject to change without notice.

DESKS BY COMPUTER-MATE™

Exclusively designed to match your IBM System. The desk protects your components, provides ample storage space and a large work area.

- Protective recessed bay for CPU and Disk Drive
- Self-adhesive plug strip with master on/off switch
- Self-adhesive cable supports
- Adjustable leg levelers
- Two roller drawers for storage
- Gray color with black accents to match IBM System

DK-01-IBM 4-foot model $399.00 (shown)
DK-02-IBM 5-foot model $499.00



CASES BY COMPUTER-MATE™

Avoid the headaches and expense of rough handling when traveling with your IBM Personal Computer by using a secure, dependable case by Computer-Mate.™ It ensures complete protection for your IBM Personal Computer. Designed to meet or exceed Air Transport Association Specification 300 for safe travel under most rigorous handling tests. An extremely durable tool that may be custom-designed to your personal specifications. Built for life.

IBM Cases

CS-01-I For CPU and keyboard $279.00

CS-02-I For monitor $199.00

CS-03-I Full transport case for CPU, keyboard, monitor and Epson MX-80 or MX-100 printer plus special, handy accessory compartment $419.00

Options:
Locks $25.00 each
Removable Caster Assembly $50.00
(for full transport case)

COVERS BY COMPUTER-MATE™ (Not Shown)

Give your computer equipment double protection from dust and spills to insure its efficient functioning over a longer life. Many types to choose from. Attractively designed and custom-fitted for each piece of your computer equipment; unobstructive to computer cables or connectors; made from anti-static vinyl that may be wiped with a damp cloth. *Call for more information.*

Computer-Mate, Inc., distributes Electrohome monitors (Model ECM 1302-2 shown). *Call or return order form for information.*



PRINTER STANDS BY COMPUTER-MATE™

Designed exclusively for your IBM Printer ...available in desk top or free standing models. Optional basket available. Sturdy construction with attractive gray color and black accents to match IBM System.

IBM Models

DTPS Desk top $39.95
18" wide x 10" deep x 8" high

PS-01-IBM $129.00
18" wide x 12" deep x 26½" high

PS-02-IBM $215.00
24" wide x 20" deep x 25½" high

PS-01-B-IBM Printer Stand Basket $20.00

CABLES BY COMPUTER-MATE™ (Not Shown)

Have greater freedom to fit your configuration needs with these extension cables, exclusively designed for the IBM Personal Computer.

Extension Cables

Keyboard Extension Cable:
3-foot, 5-pin din cable connects keyboard to CPU

K-01-IBM $28.00 each

Monochrome Monitor Extension Two Cable Set:
3-foot, 9-pin monitor extension cable
3-foot power extension cable
Both cables needed to connect monitor to CPU

MMP-02-IBM $49.00 per set

All items available at your local participating ComputerLand stores or other fine dealers. If a local dealer isn't available, order direct from Computer-Mate.™

I would like to order the items checked below:

Desk:
- ☐ DK-01-IBM 4-foot model $399.00
- ☐ DK-02-IBM 5-foot model $499.00

Printer Stands:
- ☐ DTPS Desk top $39.95
- ☐ PS-01-IBM $129.00
- ☐ PS-02-IBM $215.00
- ☐ PS-01-B-IBM Printer Stand Basket $20.00

Cables:
- ☐ K-01-IBM Keyboard $28.00 each
- ☐ MMP-02-IBM Monochrome Monitor $49.00 set

Cases:
- ☐ CS-01-I CPU/Keyboard $279.00
- ☐ CS-02-I Monitor $199.00
- ☐ CS-03-I Transport $419.00

Options:
- ☐ Locks $25.00 each
- ☐ Casters $50.00 each

Covers:
Call or return form for prices and sizes.

Electrohome Monitors:
Call or return form for information

Video Film Recorder:
- ☐ VP-01-35 $2,495.00

Enclosed is my check or money order for

$ _____
including $2.00 for shipping ... except desk, include $15.00.

Charge my ☐ MasterCard ☐ VISA ☐ American Express Please send shipment C.O.D. ☐

Bank No _____ (For MasterCard and VISA) _____
Card No. Exp. Date

Please send to: _____

Signature _____

Name _____

Street _____ City _____

State _____ Zip _____ Phone No. _____

To order or for more information, send form or call: Computer-Mate, Inc., 1006 Hampshire Lane, Richardson, Texas 75080. Dallas (214) 669-9370 • Houston (713) 491-6550 • Texas Residents (800) 442-4006 • Out of State (800) 527-3643.
Please allow 4 to 6 weeks for delivery.

IBM* Pascal and FORTRAN Programmers

Don't despair over the video screen I/O limitations you're working under. Help is on the way.

If you want to produce user-friendly, professional quality screen formats—no problem. If you need access to the Personal Computer's powerful color and graphics capabilities—no problem. And if you are yearning for complete cursor control, scrolling, reverse video, underlining, highlighting and blinking on a per character basis—no problem.

PASCAL PAK™ and FORTRAN PAK™ have solved your problems.

PASCAL PAK and FORTRAN PAK are libraries of assembly language routines running under IBM DOS. These software tools give you complete control of the video screen and allow you to develop sophisticated software that runs with either the color/graphics or the monochrome display adapter.

So if you require the programming power of Pascal or FORTRAN coupled with the video screen flexibility of BASIC, you need PASCAL PAK and FORTRAN PAK.

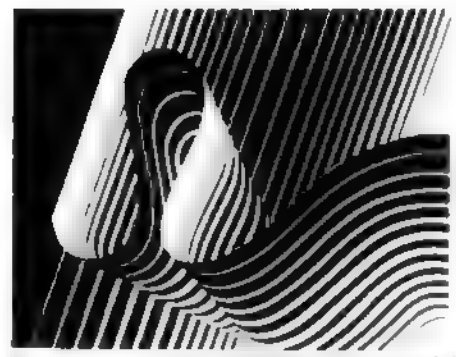
PASCAL PAK and User's Manual	*$125*
FORTRAN PAK and User's Manual	*$125*
Either User's Manual	*$15*

Include $2.00 for shipping and handling.

Illinois residents add 7% sales tax. Visa and Master Card accepted. Send check or money order. Allow 2 weeks for personal checks to clear.

SOURCEWARE* (312) 955-4539
1401 East 55th Street, Suite 601, Chicago, IL 60615

*IBM is a registered trademark of International Business Machines Corporation



OMS INC.

ORGANIZATIONAL MANAGEMENT SYSTEMS INC.

LEADERS IN SOFTWARE TECHNOLOGY
Presents
...the newest member of the Decision Support Series

THE PC MoneyMan ®

Exclusively for the IBM Personal Computer

The financial manager featuring full function management tools for the HOME and BUSINESS

- Checking account management
- Income and expense analysis
- Budget planning and control
- Summaries for tax analysis
- Complete transaction capability
- Plain English - no cryptic codes
- Powerful query language...inquire by date, account, category etc., in any order.
- State-of-the-art extended hashing data base technology for fast query access and disk utilization
- Structured programming in Pascal and assembler for maximum reliability and speed

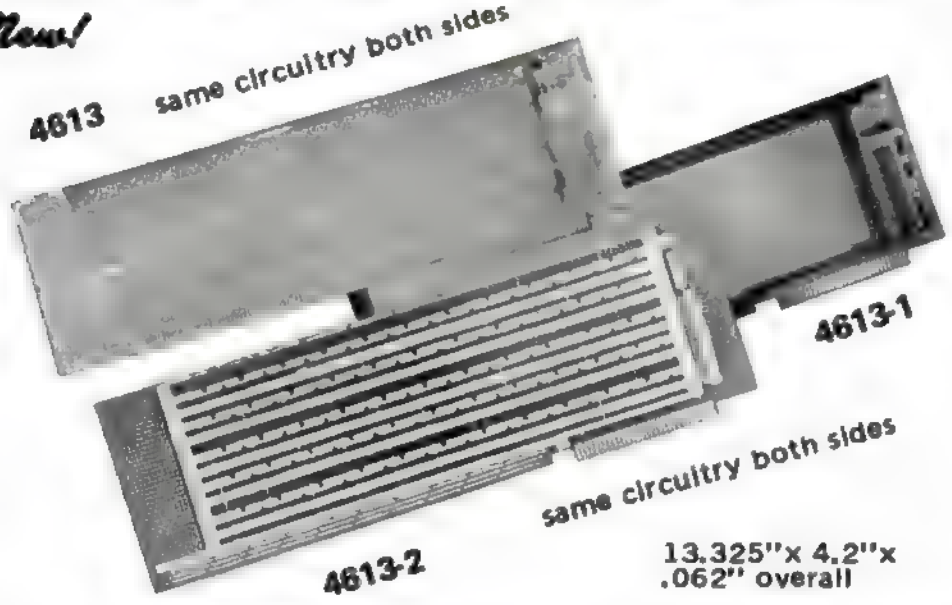
128 K required, 2 drives desirable

Please send me _____ copies of **THE PC MoneyMan ®** @ $65
Name _____
Address _____
City_____ State_____ Zip_____

Send your order with check/money order to:
ORGANIZATIONAL MANAGEMENT SYSTEMS, INC.
3 Chickory Court, Glen Arm, Md. **21057**
(301) 668-9011
MD residents include 5% sales tax

VECTOR PROTOTYPING PLUGBORDS FOR IBM* PERSONAL COMPUTER

New!



13.325"x 4.2"x .062" overall

- Fit any slot in IBM Personal Computer
- 31/62 gold plated contacts on .1" ctrs.
- Tinned buses terminate to edge contacts per IBM standard
- Punched universal I/O connector mounting bracket, card guide layout sheets, instructions included
- Accept any width DIP ICs
- .043" dia. drilled holes on 0.1" grid

4613-1 -bare board with Peripheral Buses for unlimited component placement $37.00

4613 3-hole-Pads & Bus Board for soldering or wire wrapping. Plated thru holes. $59.00

4613-2 -Wire Wrapping Bus Board with full power & ground plane. Plated thru holes $59.00

3690-22 -5.7"H x 3.2"W extender card with attached connector & mounting bracket, labeled test points $22.35

*IBM Reg. T.M. of International Business Machines Corporation
Prices subject to change without notice

Vector Electronic Company INCORPORATED
12460 Gladstone AV
Sylmar CA 91342
phone (213) 365-9661

86827

Friction Feed for Your PC Dot Matrix Printer

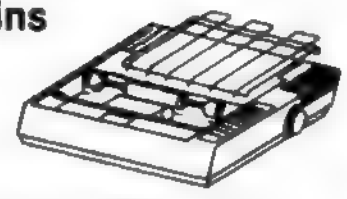
Micro-Grip™

FRICTION FEED FOR YOUR EPSON

MX-70* or ***MX-80****

*MX-70 and MX-80 are Trademarks of EPSON, Inc.

- **Converts your printer for friction feed of SINGLE SHEETS or ROLL PAPER.**
- **SIMPLE Installation (all you need is a screwdriver, no soldering).**
- **Tractor feed remains undisturbed.**
- **Only $39.95**
  (add $2.00 for shipping)

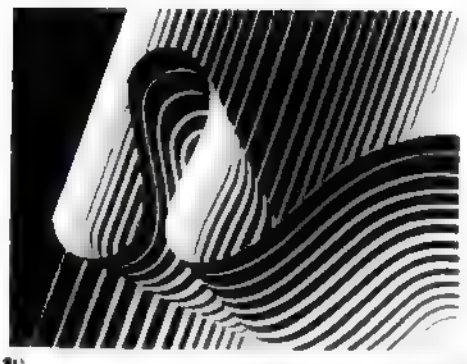


CALIFORNIA RESIDENT ADD 6% STATE SALES TAX

SATISFACTION GUARANTEED OR YOUR MONEY BACK

VISA & Master Card Accepted
(714) 864-6643

MICRO-GRIP, Ltd.
P. O. Box 4278
Norton AFB, CA 92409



OMS INC.

ORGANIZATIONAL MANAGEMENT SYSTEMS INC.

LEADERS IN SOFTWARE TECHNOLOGY
Presents
THE SORT
General Sort and Merge Utility
Created exclusively for the IBM Personal Computer
in 8088 assembler language
$95

THE SORT SORTS:

- BASIC, PASCAL FORTRAN COBOL and MailMerge files
- sequential random files
- records organized by items and lines
- multiple line records like MailMerge*, or sorts records in fixed column position (Binary or BASIC Random files)

THE SORT PROVIDES:

- for all common data types (string-text, integer real, double precision)
- external and internal data representations
- interactive parameter preparation
- uses a parameter file so THE SORT can be run in batch processes
- record selection

Requires 48 K and one disk drive, but uses all available memory

Also OMS SOFTWARE DEVELOPMENT SERIES

A PASCAL SCREEN UNIT Access screen and keyboard from Pascal program $40
B PASCAL DOUBLE PRECISION ARITHMETIC PACKAGE Increase your Pascal integer arithmetic precision to 32 bits! $40
C UTILITY PACKAGE converts video modes, opens communication lines, speeds up I/O, Sets Epson and NEC tabs $25

Please send me _____ copies of THE SORT @ $95
_____ copies of Pascal Screen Unit @ $40
_____ copies of Double Precision Arithmetic @ $40
_____ copies of Utility Package @ $25

MD residents include 5% sales tax

Name & Address _____

Send order with check money order to
ORGANIZATIONAL MANAGEMENT SYSTEMS, INC
3 Chickory Court, Glen Arm, Md 21057
(301) 668-9011

Dealer inquiries invited
* MailMerge is a registered trademark of MicroPro Corp

CHIP WARS

software for the IBM PC



Down on the farm there's excitement and action every night. Charging bulls, flying chips and chicken eggs too!

Challenging adventure and thrills for the whole family

If you think you can throw it...

Wait till you try this!

- **key pad control**
- **64K, BASICA, medium resolution color graphics**

Order your "CHIP WARS" package now for just $39.95

ACCUSOFT*
84 Great Valley Parkway, Malvern, PA 19355
(215) 296-7376

*a division of ACCUPIPE Corporation

Custom communications software for the larger installation

Serious use of the PC in a distributed computing environment requires more than off-the-shelf software. We provide custom communications software, tailored to your specifications, your network, and your mainframe—at competitive prices.

***REAL* UPLOAD/DOWNLOAD.** Using our custom *mainframe* software (instead of the mainframe text editor) allows full error-checking/correcting and the transfer of arbitrary binary files (not just ASCII files), regardless of your system's idiosyncracies.

POPULAR TERMINAL EMULATION. Integrated smart-terminal emulation capabilities allow you to continue using your current terminal-specific applications software on the PC. We offer support for windows, editing functions, full access to video attributes, and more.

Fully buffered, interrupt-driven, written in machine language for superior responsiveness.

For further information, call **202/223-3603** or write:

circle micro
P.O. Box 33634, Washington, DC 20033-0634.

PC/8088 PORTABLE Personal Computer

from **$3,088.**



with **COLOR / GRAPHICS**

PORTABLE System for IBM's/PC

- **INTEGRAL 7 IN./9 IN. CRT DISPLAY**
- **DETACHABLE IBM A-N KEYBOARD**
- **IBM COMPATIBLE & CP-M80/86, DOS**
- **COMPACT PORTABLE ENCLOSURE**

IBM is a registered trademark of International Business Machines

O - IBM PERIPHERAL FEATURES
P - DUAL 5¼" DISK DRIVES - 1 M.
T - WINCHESTER DISK - TO 20 M.
I - HI-RES. GRAPHICS/COLOR CRT
O - Z80 DUAL-PROCESSORS
N - MULTI-TASKING SYSTEMS
S - IBM DATA COMMUNICATIONS

- MONITORS -
9, 13 or 19" CRT
RGB Color
Hi-Res to 1024 pix.
Remote/Receiver

© 1982

Computer Systems 28401 HARPER ST. CLAIR SHORES MI 48081 **313 779-8700**

PEP
BUSINESS SYSTEM

Compare our software to the competition

1) Inventory Control
BILLS-OF-MATERIAL — PURCHASE ORDERS; SALES ANALYSIS — STOCK LABELS + MORE

2) Accounts Receivable
ORDER ENTRY & PACKING SLIPS; INVOICES FROM O/E OR POINT OF SALE; CUSTOMER PAYMENTS W/DISCOUNTS; STATEMENTS; AGED RECEIVABLE REPORTS + MORE

3) Accounts Payable
VENDOR INVOICE ENTRY AND CHECK WRITING; BANK DEPOSIT, AGED PAYABLES REPORTS + MORE

4) Payroll
DATA ENTRY, AUTOMATIC CALCULATION & DEDUCTIONS, PAYCHECK WRITING, MO-QTR-YTD REPORTS — 941-A and W-2

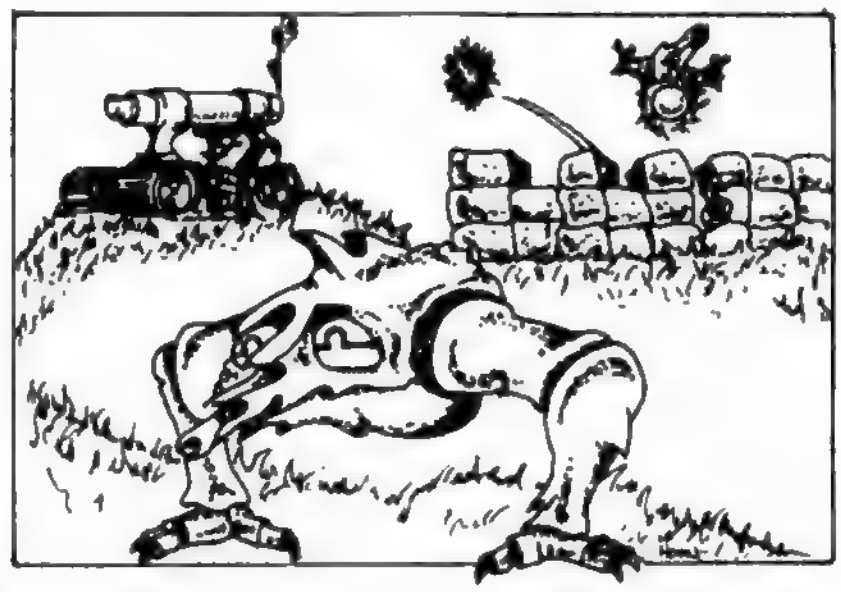
5) General Ledger
FULLY INTERACTIVE WITH ALL OTHER PROGRAMS! TRIAL BALANCE, REVENUE, EXPENSE, OPERATING & BALANCE SHEET.

For Free Brochure, Call or Write:

PERFORMANCE ENGINEERED PROGRAMMING
3970 Syme Drive
Carlsbad, CA 92008 (619) 434-6023

PERSONAL COMPUTER PRODUCTS PRESENTS...

OMEGABUG™



OMEGABUG is an exciting game for the **IBM®** Personal Computer with 64k memory. You can blast the OMEGABUG & his unrelenting army in TEN stages at FOUR different speeds. The program disk has versions for both COLOR & MONOCHROME display, with or without SOUND, and does not require the use of joysticks to play.

Available at participating COMPUTERLAND™ stores or order direct from:

PERSONAL COMPUTER PRODUCTS
1400 COLEMAN AVE., SUITE C-18
SANTA CLARA, CA 95050
(408) 988-0164

OMEGABUG DISKETTE $29.95
VISA/MC/C.O.D. ok
Dealer inquiries invited.

IBM is a registered tradmark of International Business Machines Corp.

OPTIMUM-SORT

Powerful SORT/MERGE utility for the IBM Personal Computer

- **SORT FILES**
  Ascending or Descending, multiple fields
- **MERGE FILES**
  Combine multiple files into one file
- **VERY FAST**
  Efficient machine language program
- **EASY TO USE**
  Prompts you for all required input
- **FULL DOCUMENTATION**
  Fits right in the IBM—PC manuals
- **$125**
  VISA and MasterCard accepted

TO ORDER CALL (713) 454-7428
or WRITE TO:

OPTIMUM DATA PROCESSING
P.O. BOX 2167 • HUMBLE, TEXAS 77347

OPTIMUM-SORT RUNS UNDER PC-DOS

TIME IS MONEY SO DON'T WASTE IT!

Riverlake Systems allows you to save time! With our SP-16 or SP-32 you can continue working with your computer while your printer or plotter is still running! Our Universal Spooler will buffer up to 32K bytes of data from a serial or parallel peripheral. The Universal Spooler is controlled by a Z80 microprocessor that uses all static memory. A self-diagnostic mode performs an internal memory test and reports the results to a printer.

SPECIFICATIONS

Serial Ports:
- 7 baud rates to 19,200
- 7 or 8 bits even/odd/no parity
- 1 or 2 stop bits
- Standard RS232C pin outs

Parallel Ports:
- Centronics Compatible
- Pin Compatible with IBM PC and IBM PC printer

Price:
- SP-16-16K Buffer $279
- SP-32-32K Buffer $329

(Please include $5.00 for shipping handling & insurance)

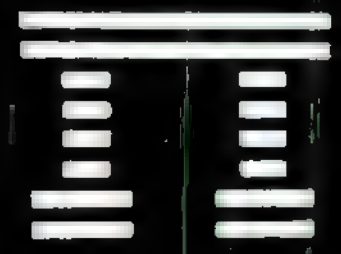


RIVERLAKE SYSTEMS, INC.
P.O. Box 1927
Roswell, Georgia 30077
404-475-0028

VT100 for $125?

For only $125, our TE100 software package turns your IBM PC into a "full-featured" DEC VT100, VT101, VT102, or VT52 terminal.

Requires 64K, 1 disk, monochrome or color display, MS DOS. $125 plus $3 shipping. Wisconsin residents please add 5% sales tax.



PERSOFT, INC.
2186 U.S. Highway 51
Stoughton, WI 53589
Phone: (608) 873-8888

VT is a registered trademark of Digital Equipment Corp.
IBM PC is a registered trademark of IBM Corp.
TE is a trademark of Persoft, Inc.

P-EDIT

Are You Still Writing Programs with a Hammer and Chisel??

Even in today's high-tech society, there are editors which are so primitive that you might as well be using a hammer and chisel! So what's our solution?

P-EDIT is a professional program editing tool that lets you concentrate on designing programs without concern for file size or other editor restrictions. With introductory pricing at $195, it is easy on your budget and our unconditional money back guarantee makes it absolutely risk-free!

SSI Satellite Software International
288 W. Center
Orem, UT 84057

SSI
(801) 224-8554
Telex 453 168

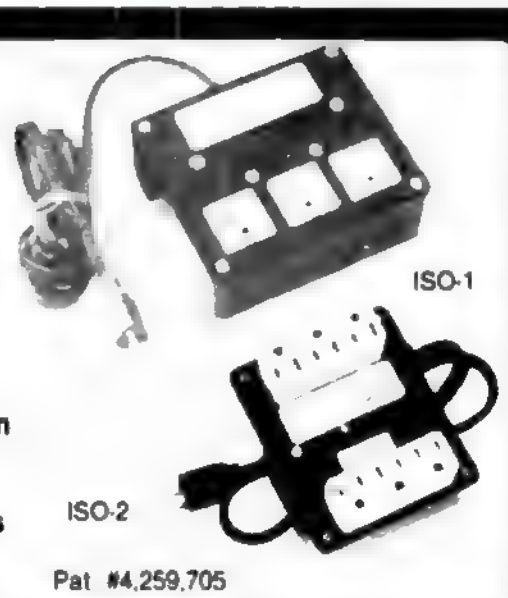
WARNING!

Electric Power Pollution. Spikes & Lightning HAZARDOUS to MICROCOMPUTERS!!

Patented ISOLATORS provide protection from . . .

- **Computer errors cause by power line interference**
- **Computer errors due to system equipment interaction**
- **Spike damage caused by copier/elevator/air conditioners**
- **Lightning caused damage**

MONEY BACK GUARANTEE!



Pat #4,259,705

- **ISOLATOR (ISO-1) 3 isolated 3-prong sockets; Spike Suppression; useful for small offices, laboratories, classrooms. $69.95**
- **ISOLATOR (ISO-2) 2 isolated 3-prong socket banks; (6 sockets total); Spike Suppression; useful for multiple equipment installations. $69.95**
- **SUPER ISOLATOR (ISO-3) similar to ISO-1 except double isolation & oversize Spike Suppression; widely used for severe electrical noise situations such as factories or large offices. $104.95**
- **SUPER ISOLATOR (ISO-11) similar to ISO-2 except double isolated socket banks & Oversize Spike Suppression; for the larger system in severe situations. $104.95**
- **MAGNUM ISOLATOR (ISO-17) 4 Quad Isolated Sockets; Multiple Spike Suppressors; For ULTRA-SENSITIVE Systems in extremely Harsh environments. $181.95**
- **CIRCUIT BREAKER, any model (Add-CB) . . . . . Add $9.00**
- **REMOTE SWITCH, any model (Add-RS) . . . . . Add $16.00**

AT YOUR DEALERS **MasterCard, Visa, American Express**
ORDER TOLL FREE 1-800-225-4876 (except AK, HI, PR & Canada)

ESP Electronic Specialists, Inc.
171 South Main Street, Box 389, Natick, Mass 01760
(617) 655-1532

THE PERFECT MATE.

FOR YOUR IBM PC IS HERE AT LAST . . .

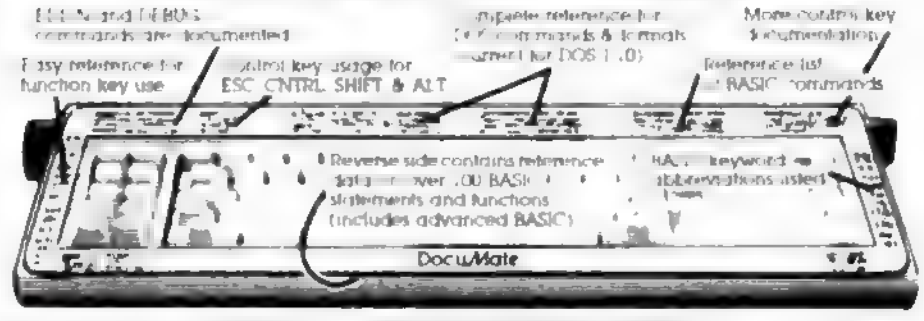
DocuMate™ is the perfect mate for your PC! It's an innovative **docu**mentation overlay which **mate**s with the PC keyboard. On one side **DocuMate**™ gives you the essential reference data you need for ● DOS Commands and Formats ● Function and Control Key usage ● BASIC Commands and Keyword Abbreviations ● EDLIN and DEBUG Commands. And on the reverse side over one hundred of the most frequently used BASIC Statements and Functions are **DocuMated**.

INFORMATION WHERE YOU WANT IT . . .

DocuMate™ puts the information you need where you want it on the keyboard. No more digging through manuals or fumbling with reference cards. the commands and formats are right at your fingertips! **New users** will become proficient more quickly using **DocuMate**™ as a tutor. **Experienced users** will work faster and more efficiently by having essential commands available at a glance.

AND MORE . . .

● Easy-to- read bold-face type ● Thoughtful user-friendly design ● Color coordinated, non-glare surface ● Attractive appearance ● Durable, high-impact polystyrene construction ●



A SPECIAL INTRODUCTORY OFFER . . .

DocuMate™ is a time saving productivity aid no PC owner should be without. Order yours today at our special introductory price of only $8.95 plus $1.05 postage.

Available only by mail from
Systems Management Associates
P.O. Box 20025, Dept. B-1
Raleigh, NC 27619

VISA

Card # _____
Cash Check
MC Visa Name _____
Exp Date _____ Address _____
MC IntBk # _____ Signature _____ Zip _____

Dealer inquiries invited. Corporate, institutional, quantity discounts available.
N.C. residents add 40¢ sales tax.

NF SYSTEMS LTD. PRESENTS:

HOSTCOMM
by JANADON

The Personal Host Communications System

★ Features:

- The first Host communications system for the IBM Personal Computer
- Run programs from a remote site with a terminal or another computer
- Use as a personal communications system or electronic mailbox
- Full Upload/Download facility for ASCII files
- Easy set-up, installation, and especially easy to use
- Full system operator support
- Three level password protection
- Unattended operation

★ Minimum Systems Requirements:

- 96KB System Unit
- 320KB Diskette storage (1 or 2 drives)
- PC-DOS 1.0 or 1.1
- Video Display (40 or 80 characters)
- Printer
- Asynchronous Communications Adapter
- Hayes Stack™ Smartmodem

List Price **$139.95**

NF SYSTEMS, LTD.
P.O. Box 76363
Atlanta, GA 30358

Catalog Available

IBM Personal Computer

Call collect to order – 404-252-3302
Add $2.50 for postage and handling

DON'T MISS OUT ON OUR SPECIAL OFFER . . . Scotch® QUALITY AT A BUDGET PRICE!



$23.50

Owners of Apple and IBM personal computers deserve the reliability of **Scotch**® error-free performance when buying computer diskettes. **FUTRA** is now offering ten (10) **Scotch**® double density, soft sectored diskettes with reinforced holes in a protective storage case for easy filing . . . for only $23.50.

10 **Scotch**® diskettes w/protective storage case . . . **$23.50**
Protective storage case only . . . **$1.50**

Send your order to **FUTRA COMPANY**, P.O. Box 4380, Torrance, CA 90510
MasterCard and Visa call **(213) 328-8951** or **1-800-5006** (Outside Calif.)
Add $1.00 for handling. California residents add 6.5% sales tax

---

THE OSBORNE ACCOUNTING SYSTEM

NOW ON THE IBM® Personal Computer



- **General Ledger (includes Cash Journal)**
- **Accounts Payable**
- **Accounts Receivable**
- **Payroll**

For years, the manuals for the Osborne System have been sold nationwide, and have helped turn the micro-computer into a serious business tool. Until now, however, the programs wouldn't work on your IBM-PC. They were written in a completely different dialect of BASIC.

MENTOR COMPUTER SERVICES has changed all that! We've implemented the Osborne System under PC-DOS, and are making each module available for just $99.

Until now, you either had to pay well over a thousand dollars for a reliable accounting package, or take a chance on one with no proven track record. As we said, MENTOR COMPUTER SERVICES has changed all that!

Call us right now at (408) 684-1617 to place your order.

MENTOR
Computer Services

P.O. Box 8140 Santa Cruz, CA 95061

NEW! For The IBM® PC



only $59.95

Wash. Residents add 6.4% sales tax
Please add $2.00 for Shipping & Handling

THE PURSE STRINGS

The Handiest Program Yet For Managing Your Checkbook!

- **Simple To Use — No Programming**
- **Easy, Rapid Data Entry — Minimum Keystrokes**
- **52 User-Defined Budget Categories**
- **Up To 2400 Checks/31 Registers Per Disk**
- **Instant Access To Any Check**

PAYS FOR ITSELF AT TAX TIME!

Order Now From
PUYALLUP VALLEY SOFTWARE, INC.
P.O. BOX 703 — SUMNER, WA 98390
or Phone (206) 863-4277

IBM is the Registered Trademark of the International Business Machines Corp

FORTH-32™
IBM® PC

Now you can program using the entire IBM® PC memory. The FORTH-32 SEGMENT SENSING language makes segment boundaries transparent to the programmer

The FORTH-32™ DEVELOPMENT SYSTEM features intermixed 16 and 32 bit addressing modes with fig-FORTH compatibility, DOS interface, full screen editor, assembler, disassembler, graphics and debug. The powerful QUEST CASE statement with single, multiple and range labeling is also included.

In addition to FORTH-32™ you will receive the QUEST PACKAGE BUILDER UTILITY which transforms user developed programs into marketable software packages by building on disk a condensed executable image with only those FORTH words needed.

User oriented self-teaching documentation! All software is fully backed and updated for one year.

$100 FORTH-32 (SPECIFY PC-DOS, OR CP/M-86™)
$50 FLOATING POINT LIBRARY (SOFTWARE OR 8087)

FORTH-32 AND QUEST ARE TRADEMARKS OF QUEST RESEARCH INC
IBM IS A REGISTERED TRADEMARK OF IBM CORPORATION
CP/M-86 IS A TRADEMARK OF DIGITAL RESEARCH INC

Quest™

C.O.D.

QUEST RESEARCH, INC.
P.O. BOX 2553
HUNTSVILLE, AL 35804

Call Toll Free
(800) 558-8088
In Alabama Call
(205) 533-9405

25% ROYALTY

We are a new Software Publishing house searching for talented software authors. If you can write software for the IBM PC* or you have written software for other computers which can be adapted to run on the IBM PC, please contact us. If we believe that your software would have a wide appeal among the thousands of new IBM PC owners, we will market it on a nonexclusive agreement basis and pay you a 25% Royalty.

WE ARE PARTICULARLY INTERESTED IN THE FOLLOWING:

- Entertainment and arcade-type games which utilize 3-D graphics. Also any classical games such as Chess or Duplicate Bridge.
- Spreadsheet, Word processing, Utilities, Mailing list, Data Management, Communications, Stock market and Investment analysis software.
- Compilers/Interpreters for the Pascal, Cobol, Algol, APL, C, Fortran, Forth, Lisp and Logo programming languages.
- Software for the home, personal finance, nutritional dietary planning, schedule planning, etc.
- Education: tutorial software for grammer school, high school, and college subjects as well as for the SAT, GRE MCAT, and LSAT examinations.

The above, of course, is only a partial list. We will gladly review your software and, if necessary, provide constructive suggestions on how to improve it so that it could be considered for marketing at a later date. Send your software and accompanying documentation to:

***STONE*™**
SOFTWARE PUBLISHING, INC.
7910 IVANHOE AVE., SUITE 319
LA JOLLA, CA 92037 (714) 272-2400

*IBM PC is a trademark of IBM Corp.

LEARN VISICALC™
THE EASY WAY WITH READY-MADE TEMPLATES



Load your Visicalc™ with our templates, then key your numbers in.

DO YOUR:

ESTIMATING IN CONSTRUCTION JOB COST — The Building Site • Preliminary Costs • Site Clearing, Excavation, and Fill • Footings • Foundation • Floor System • Super Structure • Roofing • Electrical, Plumbing, Heating, and Air Conditioning • Brickwork • Energy Saving Materials • Interior Wall and Ceiling Finish • Exterior Trim • Concrete Floors, Walks, and Terrace • Interior Trim • Painting, Floor Covering and Appliances • Gutters, Onsite Improvements and Misc. • Overhead Contingency and Profit.

ANALYSIS IN FINANCE — Break-Even Analysis • Cash Budget • Pro-Forma P&L • Pro-Forma Balance Sheet • Ratio Analysis • Depreciation Tables (5) • Net Present Values.

PROJECTIONS IN REAL ESTATE — NIREB Forms: CID B — Property Analysis • CID C — Comparative Investment Analysis • CID D — Individual Tax Analysis • CID G — Excess Depreciation • Net Proceeds • CID I-A — Internal Rate of Return

BUDGETS FOR THE HOME — Personal Budget • Shopping List • Mortgage and Loan • Individual Retirement Account • IRS Schedule A

Future Templates — Retailing • Energy Audit • Engineering • Statistics • Multi-Level Marketing. Customize Templates $30

Run on Apple II • TRS-80 I, II, III • IBM PC • Atari 400, 800 • Commodore

Orders Only — (800) 525-9391 ext. 533
Inquiries — (714) 338-5075

COD — Cashiers Chk. or Money Order Only • Prepaid — Personal Check O.K. • UPS — Add $2.50 shipping and handling Street Address required. • Calif. — add 6.5% sales tax

SOFTWARE MODELS
"The Template People"
P.O. Box 1029
Crestline, CA 92325

MICRO FLASH
Best Prices / Service in a Flash

SOFTWARE SPECIALS	RETAIL	MICRO-FLASH
Ashton Tate dBase II	$700 00	$495 95
IUS EasyWriter II	350 00	244 95
IUS EasyFiler	400 00	279 95
IUS EasySpeller	175 00	122 95
Innovative/T I M III	495 00	346 95
Visicorp Visicalc	250 00	199 95
Continental Home Accountant Plus	150 00	97 95
HARDWARE SPECIALS		
Amdek Color II RGB	$899 00	$763 95
Microsoft 256K RAM Card	875 00	743 95
Percom Dual Drive	549 00	461 95
TB Joystick	64 95	51 95
Tech Designs Game Paddles	39 95	31 95

MANY OTHER PRODUCTS AVAILABLE!
All Products Guaranteed - Service Before & After the Sale

SEND CERTIFIED OR CASHIER'S CHECK TO

MICRO FLASH
120 VILLAGE SQUARE, SUITE 126
ORINDA, CA 94563

OR CALL

(415) 680-1157

NO CREDIT CARD SURCHARGE

ONLY $4 00 SHIPPING HANDLING & INSURANCE PER ORDER
HIGHER FOR MONITORS & PRINTERS—PLEASE CALL
CA RESIDENTS ADD APPLICABLE SALES TAX
ITEMS AND PRICES SUBJECT TO CHANGE

IBM PC Trademark of IBM Corporation

Add Professional Screen I/O to your IBM PC-DOS Basic Programs!

Only $35

Now your PC screen I/O can work like an IBM mainframe! Merge our efficient Basic code into your own program, and you can easily display a full-screen input format as protected information. To enter data you simply fill in the blanks.

- Features optional Alpha or Numeric field checking, with 'BEEP" sound and rejection of invalid characters.
- Your entered data displayed in high intensity.
- Uses normal cursor control, tabs and backspace.
- Includes fully documented Basic source code.
- Screen format specifications, stored in data statement, be changed in seconds.
- Simplifies programming; eliminates cumbersome question/answer code.

Source code on disk, including shipping $35
Mass residents add 5% sales tax.

PC-Logic Systems
990 Washington Street, Dept. 327
Dedham, MA 02026
617-329-7900

In Less Than 3 Minutes

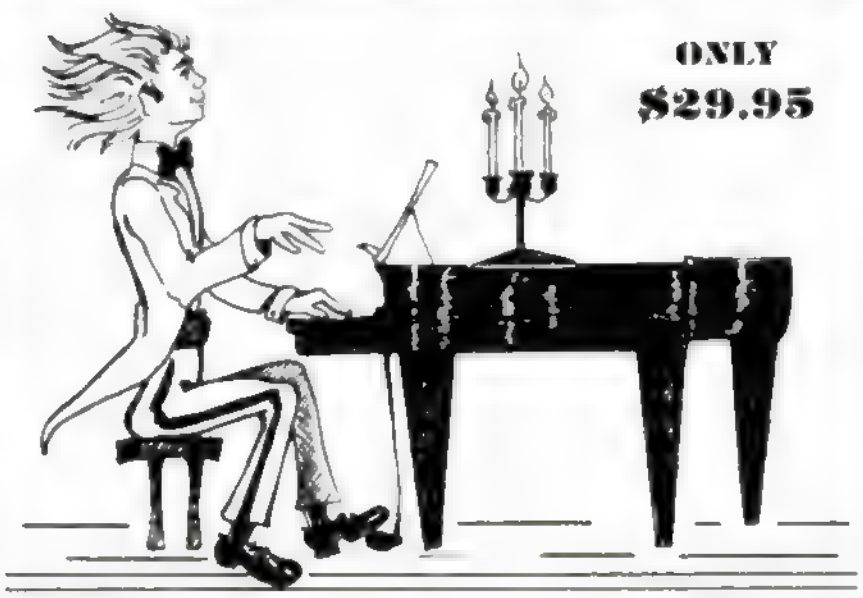
Your IBM Model 50, 60, or 75
Electronic Typewriter
can be an RS232C PRINTER or TERMINAL



CALIFORNIA MICRO COMPUTER
Models 5060 and 5061 can be installed easily and require NO modifications to the typewriter.

For additional information contact:
CALIFORNIA MICRO COMPUTER
9323 Warbler Ave., Fountain Valley, CA 92708 (714) 968-0890

PC-MUSIC BOX



ONLY
$29.95

Experience the tonal quality your computer will finally produce with these eleven full length classical masterpieces transcribed especially for the IBM-PC.

Look for our upcoming **PC-Commander** in next issue.

SOFT SOLUTIONS

419 PIERCE ST., SUITE 6
SAN FRANCISCO, CA 94117

MasterCard VISA

TRADE UP & SAVE	PRICE BREAKTHROUGH
Floppy Disk Drives **Tandon TM100-2** **(2 Headed)** **ONLY $199*** **or $275** **without trade** **Still available TM100-1 $180** **NEW TM100-4 (2 head 80tk) $319*** **$399** **without trade** ***with trade-in of your good TM100-1 drive.**	**Famous Manufacturer** **6.3 MEG WINCHESTER** **$1599** **COMPLETE** **120 day warranty** **Power Supply, case (external), cables, DOS, adapter** **9.6 MEG complete $1799** **12.6 MEG complete (2x6.3 meg) $2399** **19.2 MEG complete (2x9.6 meg) $2799**
BACK BETTER THAN EVER— (215) 461-5437 Terms: COD or prepaid F.O.B. Shipping Point	**DISK SUPPLY CO.** Suite 439 111 S. Olive St. Media, PA 19063

Presenting A 16-Bit Christmas

A collection of Christmas ideas, gifts, and suggestions for PC users and those who wish they were.

As Christmas approaches, picking out gifts can be difficult, especially for those individuals who don't leave copies of their lists where you can "accidentally" find them. You won't have to resort to subterfuge to extract gift wishes if they are owners of an IBM PC. As we demonstrated in the September issue, more than 1,250 products are available to support the PC.

To help you choose gifts this Christmas, we have drawn up our own list, which includes products that would be suitable for any PC owner. When choosing a present, keep in mind the receiver's needs and interests.

SOFTWARE

Christmas Sampler

If someone in your family can't be separated from the PC even though it is a holiday, this program can bring Christmas to the computer. It uses full-color graphic animation and sound to depict the stories *The Night Before Christmas* and *A Christmas Story*, plus a selection of carols. Screen texts to allow younger children to read along are also included. *(List Price: $29.95)*
Requires: 48K, one disk drive, (color monitor recommended).
Spinnaker Software
26 Brighton St.
Belmont, MA 02178
(617) 868-4700

MailMerge

When the elves need to be given all the different Christmas lists Santa receives so they can make everyone's gifts, Santa saves time with a program that can join each elf's name and address to a particular file of gifts to be manufactured. It isn't likely that anyone you know has the good fortune of having elf labor, but things would be much easier if he or she owned a program like the one Santa Claus has. *MailMerge* is a file-merging program used with *WordStar* to perform word processing projects such as personalized form letters, invoices, and mailing labels. It can also boiler plate legal documents from a variety of standard paragraphs. *(List Price: $150)*
MicroPro International
33 San Pablo Ave.
San Rafael, CA 94903
(415) 499-1200
Telex: 340-388

PC/FORTH

A language for graphics, data acquisition, and process control applications. The complete package includes an interpreter-/compiler with virtual memory management, a custom full-screen editor, an 8088 assembler, utilities, demonstration programs, and a 150-page user manual. Optional extension packages for floating point math, advanced color graphics, data base management, and target compilation are also available *(List Price: $100; extension packages $100 each; data base management $200; target compiler $300)*
Requires: 64K, one disk drive.
Laboratory Microsystems
4147 Beethoven St.
Los Angeles, CA 90066
(213) 306-7412

VisiCalc

No one will be accused of being a scrooge for having an efficient multipurpose forecasting and planning program. In fact, it might save enough money to buy Bob Cratchit a goose. With this software package for accountants, analysts, and business planners, users create and manipulate an electronic worksheet of up to 63 columns and 254 rows. All values or formulas in this grid may be modified, and the program automatically recalculates the entire worksheet, using the new values. Cursor control keys permit scrolling in all four directions, and the screen may be divided into two windows to view different sections of the worksheet at once.

VisiCalc is also distributed by VisiCorp as one program in an integrated "VisiSeries." *(List Price: VisiCalc by VisiCorp $250, VisiCalc by IBM $200)*
Requires: 64K, one disk drive, 40- or 80-column monitor, (printer optional).
VisiCorp
2895 Zanker Rd
San Jose, CA 95134
(408) 946-9000



Christmas Sampler, Spinnaker Software

A 16-Bit Christmas

Multiple Finance

Christmas gifts needn't be given to individuals; they can also be given to cities. If you have a favorite city in mind, this series of four programs performs the analysis necessary to structure municipal bond issues. It is designed for investment bankers and financial advisors who prefer on-site microcomputer analysis to off-site time-sharing with large computers. *(List Price: $11,600)*

Requires: 128K, two disk drives, serial interface, printer.

B.A. Nicholson & Company
271 Madison Ave. #1007
New York, NY 10016
(212) 889-7535

Pixprint

Any graphics picture (medium- or high-resolution, black and white or color) can be printed with this program. Colors are translated into shades of gray. It prints four different sizes, from playing card format to full-blown poster-size graphics without a graphics video board, from a picture stored on disk. *(List Price: $49.50, $57 Canada)*

Requires: 48K, one disk drive, Epson or IBM printer with Graftrax.

Microtaure Inc.
299 Rideau Terrace #706
Ottawa, Ontario
K1M 0Z3 Canada
(613) 745-6661

Datebook II

While counting the days of Christmas, a friend may receive a partridge in a pear tree and a number of other gifts, but he or she may also neglect a number of appointments amidst all the holiday activity. This program helps professionals organize and remember their appointments during the busy holidays and the rest of the year. It is an on-line appointment book with a menu-style display that allows appointments to be scheduled, canceled, modified, moved, or held for rescheduling. Users can search for openings by time of day, day of the week, or day of the year, and display appointments for any person, schedule conferences, or print out the day's appointments. *(List Price: $295)*

Requires: 128K, one disk drive, UCSD Pascal or CP/M-86, 80-column monitor, home and clear functions, (printer optional).

Software Digital Marketing
2670 Cherry Ln.
Walnut Creek, CA 94596
(415) 938-2880
Telex: 17-1852



PerfectData Micro Maintenance Kit, Innovative Computer Products

What Do We Name the Baby?

Prospective parents can use this program to help them choose a name for their new child. A data base of over 2,500 names can be drawn upon according to gender, initial letter, number of syllables, ethnic origin, and group designation. The computer prints out possible names. *(List Price: $25; manual only, $10)*

Requires: 48K, one disk drive, (printer optional).

Metamorphics Inc.
154 Montgomery Ave.
Bala Cynwyd, PA 19004
(215) 668-9000

Word Perfect

Those new to data processing will find that this program has been designed with them in mind. It performs word processing chores including document merging, text search, automatic headings, footers, pagination, and footnotes. It can handle large files, and it will support two letter quality printers. *(List Price: $545)*

Requires: 64K, two disk drives, 80-column monitor, printer.

Satellite Software International
288 W. Center
Orem, UT 84057
(801) 224-8554

PC Poetry

A novel software product that displays eight new poems. Titles include "Xmas Wish," "Life," "Time," and "Answer Man." *(List Price: $19.95)*

Requires: 48K, one disk drive, 80-column monitor.

Business Application Systems
P.O. Box 36008
Oaklandon, IN 46236
(317) 897-5350

M.65 Astrological Research System

The three wise kings had to keep track of the star of Bethlehem, but astrologers have to search and keep records on innumerable positions of planets and stars. This software system has been designed by astrologers for members of their profession; it functions as both a complete chart service and a research data base. The user can store thousands of charts and accompanying identifiers and search a data base for a wide variety of report results. Purchase includes a 1-year subscription to the user newsletter. The program can be adapted for nonastrological uses. *(List Price: $300)*
Requires: 64K, two disk drives, printer.
Matrix Software
315 Marion Ave.
Big Rapids, MI 49307
(616) 796-2483, 796-0381



Chronograph, Hayes Microcomputer Products

HARDWARE

Asynchronous Communications Controller

These cards provide loop-back functions of transmit/receive signals and input/output signals, and a controller adds and removes start, stop, and parity bits. A baud rate generator allows rates from 50 to 9600 baud. The product supports a variety of character formats and provides an interrupt system for handling transmit, receive error, data set, and line status interrupts. *(List Price: single-port DMS-1 $139; dual-port DMS-2 $199)*
Datamac Computer Systems
680 Almanor Ave.
Sunnyvale, CA 94086
(408) 735-0323

Game Control Adapter

No doubt the zigging, zipping, zapping sound effects of electronic games will become as familiar at Christmas time as the whirring, clanking, clanging noises of past generations' toys. If participation in the bedlam requires paddles and joysticks, an interface device that permits their attachment is also needed.
IBM Corporation
Systems Products Division
P.O. Box 1328
Boca Raton, FL 33432

Floppy Drive Controller

A floppy disk drive controller and a serial printer port in one board, both of which are functionally identical to their IBM cognates. The controller can interface up to four single- or dual-sided drives. The serial port can be used to connect to a modem or other RS-232-type device and runs with existing communications software. Installation is simple and well documented. The product includes a cable to interface to the internally mounted drives. *(List Price: $269)*
Maynard Electronics
P.O. Box 3322
Longwood, FL 32750
(305) 869-8058

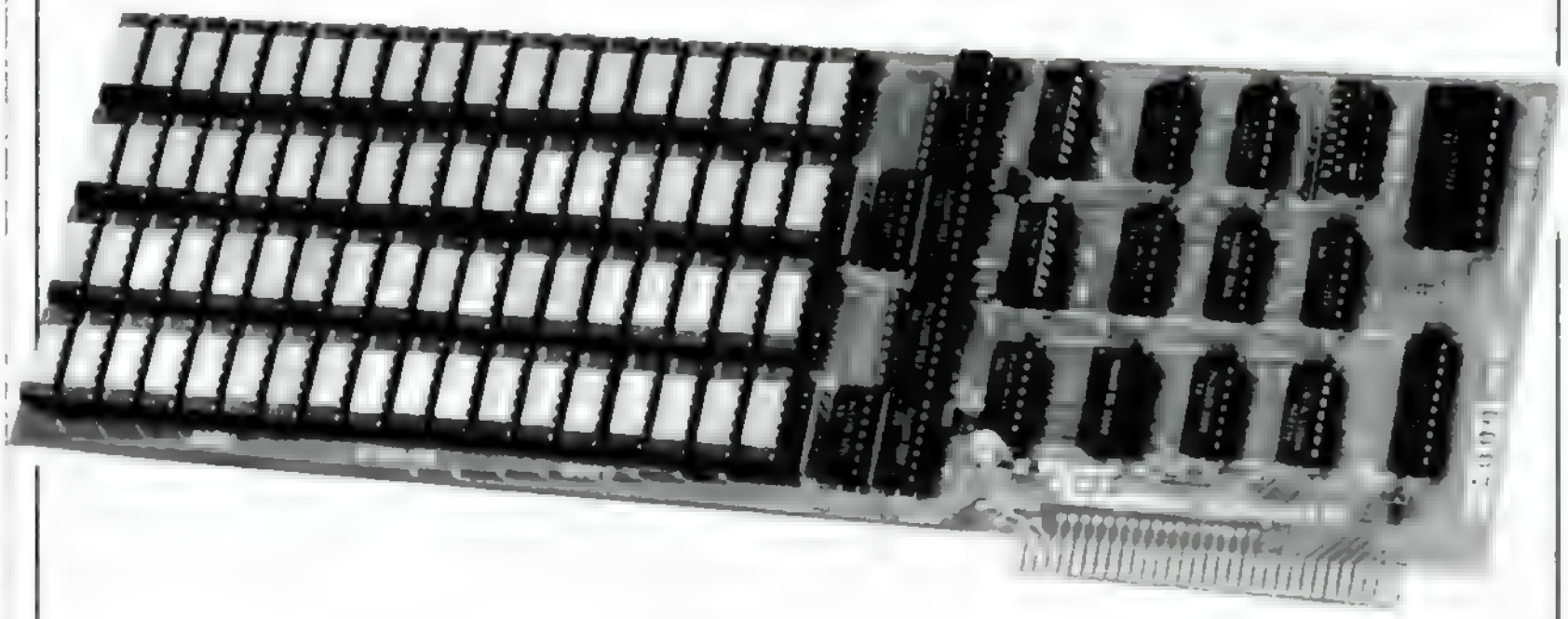
Color/Graphics Adapter

An adapter that enables the PC to provide users with a text system capable of displaying 256 different characters in any of 16 foreground and eight background colors, in 40 or 80 columns, and in upper- and lowercase. It can also display graphics in four colors on a color monitor or color television set. *(List Price: $300, IBM Product Center prices)*
Requires: Color monitor or color TV, RF modulator.
IBM Corporation
Systems Products Division
P.O. Box 1328
Boca Raton, FL 33432

Maxi-RAM Memory Board

Someone with a list as long as Santa's will value this memory board. It has 512K parity-checked RAM and is completely socketed for ease of expansion and maintenance. One-year warranty. *(List Price: $1,295)*
Memory Technologies, Inc.
25 Main St., P.O. Box 6
Twelve Mile, IN 46988
(219) 664-5741

A 16-Bit Christmas



Maxi-RAM Board, Memory Technologies

MEM Memory Expansion Modules

Anyone tired of replacing Christmas tree light bulbs and anxious to move on to a genuine do-it-yourself project will like these kits. They include 16K expansion chips to take the computer to 64K and an I/O board that can contain from 64K to 256K. The MEM16 is a kit of chips that plugs into sockets on the main board inside the computer.

The boards add either 16K, 64K, 128K, 192K, or 256K bytes of storage to the PC by plugging into the I/O connector slots inside the computer. Expansion kits are also available for the memory boards. *(List Price: MEM16 $25; MEM64 $295; MEM256 $555)*
Maynard Electronics
P.O. Box 3322
Longwood, FL 32750
(305) 869-8058

Floppy Disks

Useful and affordable gifts for someone on a tight budget. BASF offers tested floppy disks in soft-box, bulk, or plastic storage cases. *(List Price: $3.50 to $5 each, depending on quantity and packaging)*
BASF Systems Corporation
Crosby Dr.
Bedford, MA 01730
(800) 343-4600, (617) 271-6608
Telex: 951856 (Domestic)
6817069 (International)

Envision Color Printer

Christmas correspondence could be more colorful in red or green print. This color printer can execute letter quality text and high-resolution graphics. A multicartridge ribbon and carriage control system allows up to four separate ribbons to be used, permitting flexibility in selecting ribbon color or type. It includes a high-speed, 18-wire dot matrix printhead. Print speed is 100 cps. The printer switches between multiple fonts that are stored in firmware or downloaded from the host computer. All fonts support seven languages. *(List Price: $3,950)*
Requires: Standard printer parallel interface.
Envision Corporation
683 River Oaks Pkwy.
San Jose, CA 95134
(408) 946-9755

HDIII

Providing storage for a large quantity of data is the purpose of this hard disk subsystem. It comes in 9.5 and 6.3MB configurations and will drive up to four disks. The system also includes chassis, PR, controller, bus adapter, 5¼-inch disk drive, and software. *(List Price: 6.3MB subsystem $2,895; 9.5MB subsystem $3,395; PC adapter and HDIII driver software $249)*
VR Data Corporation
777 Henderson Blvd., Ste. N-6
Folcroft, PA 19032
(800) 345-8102, (215) 461-5300
Telex: 845-124

Model DXY Four-Color Plotter

Making Christmas cards can be fun with this X-Y coordinate plotter. It has a 10-inch by 14-inch effective plotting range and includes four pens, pen holders, and chart hold-downs. Functions may be expanded by additional ROM. *(List Price: $949)*
Requires: Parallel interface.
Amdek Corp.
2420 E. Oakton St., Ste. E
Arlington Heights, IL 60005
(312) 364-1180
Telex: 25-4786

Comp*U*Stone

A novel way to do this year's Christmas shopping could be to use this discount, electronic shop-at-home service for subscribers to interactive cable television systems. Users access the data base and view listings of more than 30,000 products from more than 200 manufacturers.

Products are discounted up to 40 percent below list price and include major appliances and athletic and home entertainment equipment. The service features home delivery, monthly listings of discounted bargains, consumer hints, and product evaluations. This service is accessible via a nationwide data communications network, Tymnet, or any two-way cable television network that operates as a data communications gateway. Warranties on all products. *(List Price: $25 membership fee; prime time $18 per hour; nonprime time $5 per hour)*
Requires: 48K, one disk drive, modem, communications serial, ASCII.
Comp-U-Card of America
777 Summer St.
Stamford, CT 06901
(203) 324-9261

Surge Protector

A power stabilizing unit that protects electronic equipment from power surges and voltage spikes. Designed for a single outlet, it is well suited to the PC environment, where one computer is usually plugged into an outlet at a time. *(List Price: $39.95)*
ICO-RALLY Corporation
2575 E. Bayshore Rd.
Palo Alto, CA 94303
(415) 856-9900

Hayes Stack Chronograph

This calendar/clock system reports the day, date, and time and was designed for applications needing time-keeping, such as report generation, time-sharing, electronic mail, and light, burglar alarm, and sprinkler system control. It can operate in a 12- or 24-hour mode and has a battery backup in case of power failure. Two-year limited warranty. *(List Price: $249)*

Requires: RS-232C Interface.

Hayes Microcomputer Products Inc.
5835 Peachtree Corners East
Norcross, GA 30091
(404) 449-8791

Color Monitors IIA, III, IV

Monitors that provide color for exciting charts, graphs, and games. The 13-inch Color-IIA monitor features RGB video input and can display up to 16 colors. The commercial grade CRT monitor offers high-resolution graphics display with RGB video input. The Color-IV is an RGB analog input monitor that features 560 (H) x (V) line resolution. One-year warranty on parts and labor; 2-year warranty on the CRT. Includes IBM cable. *(List Price: Color-IIA $999; Color-III $569; Color-IV $1,290)*

Amdek Corporation
2429 E. Oakton St., Ste. E
Arlington Heights, IL 60005
(312) 364-1180
Telex: 25-4786

UltraRAM

This circuit board with gold-plated edge-connector traces is more intricate and sparkles more brightly than a Christmas tree ornament. The board can be placed in any unoccupied 64K segment within the PC's address space with no special devices, circuits, or modifications required. A parity disable switch provides a "don't care" feature if parity is not desired or required by the user. The IBM diagnostics can test the memory board (both the power-up and IBM advanced diagnostics test).

Boards are available in 64K increments from 128K through 512K with socketed memory upgrade kits, as required. An instruction/operational manual is included to fit the IBM user manual. *(List Price: $1,800)*

Daystar Systems Incorporated
10511 Church Rd., Ste. A
Dallas, TX 75238-9990
(214) 341-8136

Spectrum Series

A multifunction board combining memory, serial communications, and parallel printer interface functions. Four configurations are available, varying according to memory of 64K, 128K, 192K, and 256K. Field expansion kits are available in 64K increments.

Spectrum offers programmable baud rates ranging from 50 to 19,200, in either single- or dual-channel configurations. The parallel printer port lets users choose from a variety of dot matrix, letter quality, and high-speed impact printers. A field expansion kit is available for the printer. *(List Price: From $435, depending on the configuration)*

Requires: 64K.

Personal Systems Technology
22957 La Cadena
Laguna Hills, CA 92653
(714) 859-8871

Mousetrak

"Twas the night before Christmas and all through the house, not a creature was stirring, not even a mouse." This definitely won't be the way events transpire in the household that opens presents on Christmas Eve and gets *Mousetrak*. It is a graphic input device that replaces joysticks and game paddles used for games, business graphics, and CAD/CAM applications. This two-dimensional hand-held tracking mechanism operates on a table or desk top. It features three switch select buttons. *(List Price: $99.95)*

Requires: Game adapter.

XEC Company
14222 Dallas Pkwy. #1104
Dallas, TX 75240
(214) 980-9736

TANDONIZE YOUR PC

CompuAdd Corp.
13010 Research Blvd.
Suite 218
Austin, Texas 78750

FREE SHIPPING
ORDER NOW
TOLL FREE

"If we can't ship the next working day, we won't take the order."

Tandon Drives for IBM Internal A & B:

TM100-1	5¼", single sided, 40 TRK, 48 TPI. Capable of single or double density recording	**$199**
TM100-2	5¼", double sided, 40 TRK, 48 TPI. Capable of single or double density recording	**$279**

Tandon Drives for IBM External C & D:

TM100-1 Chassis	Fully assembled beige chassis with power supply and TM100-1 drive	**$269**
TM100-2 Chassis	Fully assembled beige chassis with power supply and TM100-2 drive	**$349**
Cable for IBM External C & D chassis		**$29**

How to order — Order by calling CompuAdd Toll Free on **1-800-531-5475** (if outside of Texas) or 1-512-250-1523 (if in Texas). You can also order by mail. Orders may be charged to a MasterCard or Visa account or paid by Cashier's Check or Money Order. We do accept personal checks — allow 10 days for check processing. We pay shipping and handling on orders delivered in continental U.S.A. Add 5% sales tax if Texas resident.

All hardware has a 120 Day Limited Warranty.

A 16-Bit Christmas

AJ Daisy Wheel Printer

Designed for personal computer users and small businesses, this letter quality printer has changeable typefaces and a full ASCII keyboard with a numeric keypad. It prints at 30 cps, has high-resolution X-Y plotting, complete electronic forms control, and a 128-character buffer. Options include a forms tractor, a pin-feed platen, and paper trays. A print wheel, ribbon cartridge, and cable are included with the purchase. *(List Price: $995)*

Requires: RS-232 interface.

Anderson Jacobson
521 Charcot Dr.
San Jose, CA 95131
(408) 946-2900

TypePrinter 221

An electronic typewriter that can be connected to the PC to become a letter quality printer. When connected to a modem, it can become a stand-alone terminal without the aid of a computer or a separate CRT display. The typewriter has changeable daisy wheels with over 40 type styles available at extra cost. The printer has a correctable carbon ribbon and prints in regular, underline, bold, bold underline, and reverse type print. The printer can access Telex and TWX networks through message conversion companies. *(List Price: $2,850)*

Requires: Parallel interface. Modem and serial interface needed to access Telex and TWX.

Rogers Products Company, Inc.
249-B East Emerson Ave.
Orange, CA 92665
(714) 974-6302

ACCESSORIES

PerfectData Series

A variety of kits composed of cleaning and maintenance products may be a good gift for someone who takes pride in his or her PC and wants to take good care of it. The Tech Maintenance Kit cleans tape paths, guides, and read/write heads. The Video Display Cleaning Kit cleans terminal screens and keyboards and neutralizes static charges. The Micro Maintenance Kit combines components from all the other products into a single package for users starting a preventive maintenance program for their microcomputer system. *(List Price: Head Cleaning Kit $29.95; Micro Maintenance Kit $39.95; Tech Maintenance Kit $24.95; Video Display Cleaning Kit $12.95; Anti Static Kit $5.95)*

Innovative Computer Products
18360 Oxnard St.
Tarzana, CA 91356
TWX: 910-493-5964

Computer Furniture

Need somewhere to put the computer other than the living room floor? Computer tables, shelves, and printer tables are available in oak or birch with a natural or stained finish made of hardwood and hardwood veneer. *(List Price: 46-inch work table $175; with top-sider shelf unit $195; 36-inch work table $170; printer table $165; top-sider shelf unit $30)*

Lawrence Wood Works
11th and Haskell
Rt 2, Box 407
Lawrence, KS 66044
(913) 842-7797

$1,000,000 IBM* PC?

YESTERDAY: A 500 nanosecs $1,000,000 IBM system 360/50 handled 50 users
TODAY: A 200 nanosecs IBM PC handles only 1 user.
TOMORROW: A 200 nanosecs IBM PC can expand to 10 users!

For less than $1000,
the ALL CARD™ starts tapping this RAW PC POWER.

WATCH FOR THE NEXT ISSUE!

or contact:
ALL COMPUTERS®
a NET COMPUTERS INCORPORATED COMPANY
110 Bloor Street West, Ste. 501, Toronto, Canada M5S 2W7 (416) 960-0111

*IBM is a registered trademark of International Business Machines Corp

PC: BlueBook

Rates and Information

The *PC: BlueBook* is a quick reference guide for the 100,000 + PC owners and soon-to-be owners, and a smart investment for both readers and advertisers.

Advantages: *PC: BlueBook* is a high-response, low-cost source for advertising in the fastest growing computer market in the world. Advertisers choose between set categories or create their own specialized headings. Display advertisers may cross-reference to their current display ad.

Cost: Listings will be run on a 3X basis at $125 an issue. Copy will remain the same for 3 months and will have a set format. Seven lines of ad copy at 45 characters per line (total 315). Your name, address, and phone number should be listed at the bottom of the ad. Prepayment of $375 is required. We accept check, money order, VISA, or MasterCard. The deadline for *PC: BlueBook* is the 27th of the month 2 months prior to the month of publication.

How to List: Send copy and prepayment to Niki Stranz, *PC: BlueBook* Manager, **PC, 1528 Irving St., San Francisco, CA 94122,** or call (415) 753-0307 or 753-8088 for further information.

Accessories/Paper Forms

CONTINUOUS FORMS

Small quantities of computer forms, immediate delivery. Send for your Personal Computer Starter Kit which includes 250 continuous address labels, 100 transo-grams, 250 smooth-edge blank continuous paper. Send check for $34.95 including shipping.
MICRO FORMS
402 Muriel Ct.
Wheeling, IL 60090
(312) 459-1622

PC DUST COVER

Protect your IBM PC from dust. Not vinyl, our handsome cover is washable gray corduroy and is contour fitted for the system unit, monitor, and keyboard. $24.95 per cover. NC residents add 4% sales tax. Order by phone or mail. VISA or MasterCard welcome. Money back guarantee.
SYSTEMS SOFTWEAR
P.O. Box 3203
Durham, NC 27705
(919) 477-7784

DUST OFF!

What to buy the PC that has everything. It keeps dust out of the disk drives and sticky fingers off the keyboard. A dust cover made from three saricloth colors: green, brown, or gold. A good Xmas gift for you. Keyboard $7.95. Monitor and system unit $16.98. System unit $10.92. Shipping $2.
J&S PRODUCTS
P.O. Box 18655
San Jose, CA 95158
(408) 224-9250

WOOD CASE

Beautifully finished wood case for PC software binders, adjustable CRT shade works even outdoors, I/O port expander. Software coming soon: integrated data base/business graphics package. Money-back guarantee. Send for catalog.
NORTHWEST QUALITY PRODUCTS
P.O. Box 1001
Issaquah, WA 98027

Diskettes

DISKETTE DEPOT, INC.

A mail-order firm, initially for PC users, concerned with supplying the micro user with a variety of brand name floppy disks and diskettes. Emphasis on quality products, good service, and competitive prices. Call collect!
P.O. Box 1524
Salinas, CA 93902
(408) 424-1759

ELEPHANT MEMORY SYSTEMS

Quality diskettes are available in all popular 5¼-inch and 8-inch models and custom formats. They're guaranteed to meet or beat every industry standard for quality. They come standard with reinforced hub rings. And they sell at some of the lowest prices in the business.
LEADING EDGE PRODUCTS
225 Turnpike St.
Canton, MA 02021
(617) 828-8150
(800) 343-6833

Diskette Copy Service

DISKCOPY LABS

Fast, reliable, low-cost duplication service. Serialization available. 100-10K Qty. OEM disc 3M diskettes. IBM DOS, IBM CP/M, IBM UCSD p-Systems, single or double sided copy. Apple, Osborne, Zenith, HP, Northstar. Call for other formats.
1150 Chestnut Ln.
Menlo Park, CA 94025
(415) 326-5415

Hardware/Cables

PRINTER CABLES

Our printer cable connects the PC with Epson MX-80 parallel printers. Our price is only $35. We accept MasterCard, VISA, checks, or C.O.D. ($2 extra). Free shipping.
AUSTIN COMPUTER TECHNOLOGIES
P.O. Box 26595, Dept. P
Austin, TX 78755
(512) 835-6136

KEYBOARD EXTENSION CABLE

Gain more work space and flexibility while relieving tension on the connectors with a 6½-foot extension cord. $29.95. CA residents include 6% sales tax.
Michael Azzarello
P.O. Box 6884
Santa Barbara, CA 93111
(805) 682-7967

IBM CABLES

Mail order only. Cable to connect IBM PC CPU to the keyboard, nonaccordion. Can be used stand-alone or as an extender. 10-ft. length. $25.
CLARK SYSTEMS
389 Pheasant Run
Batesville, IN 47006

Hardware/Large Group Buys

COST-EFFECTIVE MULTIPLE PC BUYS

CTI expertise in IBM PC and PC workalike machines, peripherals, and sources enables us to assist you in making the most cost-effective total systems buy and helps you get the most out of it after purchase. See our ad this issue.
COMPUTER TECHNOLOGY INNOVATIONS (CTI)
1037 N. Fair Oaks Ave.
Sunnyvale, CA 94086
(408) 745-0180

Hardware/Boards

QUALITY CARDS AT LOW PRICES

Combo Card—multipurpose combining functions of a parallel printer/asynchronous communications (RS-232) clock/calendar. $199. Spool 64,64K byte H/ware print spooler avail. Both internal (w/parallel printer adapter) and external (stand alone ver.) $319. 64K memory card to 256K w/parity $149. Others available.
APPARAT
4401 S. Tamarac Pkwy.
Denver, CO 80237
(800) 525-7674, (303) 741-1778

LABORATORY/SCIENTIFIC

Industrial product set. PC/Mate/laboratory/scientific products bring industrial functionality to the IBM PC. Analog to digital and digital to analog, 8-bit and 12-, 14-, or 16-bit products. Stepper motor controller, digital in, digital out, and IEEE 488 interface products are featured in this product set.
TECMAR INC.
Personal Computer Division
23600 Mercantile Rd.
Cleveland, OH 44122
(216) 464-7410

THE CODA CARD

Up to 256K socketed memory, parallel port, one or two serial ports, time/date clock, and software to use memory as electronic disk drive. 512K version available. We try to beat all advertised prices. Weekdays 9 a.m. to 5 p.m. Call or write.
CODA, INC.
P.O. Box 1054
Lilburn, GA 30247
(404) 925-0640

PC ADD-ONS

We carry everything from memory upgrades and disk drives to memory cards and hard disks. Brands include Tandon, CDC, Seattle Computer, Tecmar, and more. For service and satisfaction call.
EMJ DATA SYSTEMS LTD.
79 Regal Rd. #5
Guelph, Ontario
N1K 1B6 Canada
(519) 837-2444, (416) 846-3233

192K MEMORY

Expansion board for IBM PC. No switch setting, no chance to make mistakes. Easiest installation, just plug it in. Introductory offer at $425.
CHINTRONICS CO.
19 Longmeadow Rd.
Chelmsford, MA 01824
(617) 256-7862

PC: BlueBook PC: BlueBook PC: BlueBook PC: BlueBook PC: BlueBook PC: BlueBook

BlueBook PC: BlueBook PC: BlueBook PC:

STARWRITER F-10
is the 40 cps daisy wheel that includes: low-profile design, industry standard ribbons and print wheels, standard Centronics parallel or RS-232C, extensive built-in word processing functions. The Starwriter F-10 printer is supported by a year warranty and National Authorized Leading Edge Service Centers.
LEADING EDGE PRODUCTS
225 Turnpike St.
Canton, MA 02021
(800) 343-6833, (617) 828-8150

Hardware/Storage Devices

CTI STORAGE BOOSTERS
Boost your storage capacity with versatile state-of-the-art add-ons. RAM to 576K; 5¼-inch floppy to 3.2 Mbytes; 8-inch floppy to 4.8 Mbytes; hard disk to 18 Mbytes; Serial/Parallel/Clock/Calendar/Game/Memory on one-slot cards. Send for our free memory offer. See our ad.
CTI—COMPUTER TECHNOLOGY INNOVATIONS
1037 N. Fair Oaks Ave.
Sunnyvale, CA 94086
(408) 745-0180

DISK DRIVE ALTERNATIVES
New ½-inch ht. TEAC 40-track double-sided disk drive. Compatible w/PC-DOS 1.1 or standard tandem double-sided 40-track drives $315 each. 80-track DS w/software patch compatible w/ PC-DOS 1.1 and 25% increase in storage. (800KB per drive) $435 each. Use computer for other tasks while printer is in use. Spool 64 buffers 20 pgs. data. $319.
APPARAT
4401 S. Tamarac Pkwy.
Denver, CO 80237
(800) 525-7674, (303) 741-1778

SHARED AND REMOVABLE DISK SYSTEMS
PC/Mate WINNY/5R removable Winchester disk fits into IBM system unit. This half-height unit requires no external power and costs just $1,795. Winchester/5 $2,995 and Winchester/10 $3,995. Disks feature an expansion chassis and as with WINNY/5R can be shared by multiple systems.
TECMAR INC.
Personal Computer Division
23600 Mercantile Rd.
Cleveland, OH 44122
(216) 464-7410

Publications

FREE DIRECTORY
32 pages on top-quality software at mass-production prices. Integrated accounting system and payroll, ultimate data base manager, advanced inventory, mailing list, text formatter, and many more. Send a legal-size, self-addressed, stamped 37-cent envelope to:
MICRO ARCHITECT INC.
96 Dothan St.
Arlington, MA 02174
(617) 643-4713

IBM/PC SURVIVOR'S MANUAL
Short, easy-to-read and understand primer for absolute beginner on IBM PC. $11.95 plus $2 shipping.
MAYER ASSOCIATES
755 New York Ave.
Huntington, NY 11743
(516) 921-7876

PC COMPANION
Pocket-size programming tool now available for the IBM PC. This handy, quick-reference card lists ASCII codes and their values. A must for any programmer. To order send $1. Quantities available.
D2 ENTERPRISES
P.O. Box 871
Shalimar, FL 32579
(904) 651-3108

SOFTWARE CATALOG
For the IBM Personal Computer. Looking for IBM PC software? Let us help you. Free IBM PC software catalog. Only one of its kind.
UOI COMPANY
15445 Ventura Blvd. #1092C
Sherman Oaks, CA 91413

MAKE YOUR PC PAY ITS WAY
A professional marketing expert explains how you can profit by offering computer service from your home using your PC. This booklet includes ideas on programs needed, marketing your products, and tax benefits. Make your hobby pay for itself. $11.95 Canadian. Money orders only.
QUASAR CONSULTING
13015 6th St. SW
Calgary, Alberta
T2W 4J8 Canada

IBM PC CONVERSION HANDBOOK
A guide to the conversion of Apple, TRS-80, and Pet Basic Programs into the IBM PC Basic. Includes a quick-reference table for each language. $8.95, $1 postage and handling.
MANAGEMENT TECHNOLOGY
P.O. Box 6075
Denver, CO 80206
(303) 629-5778

SOFTBOOKS
Interactive textbooks with business, scientific, and educational applications calculators for *Multiplan, VisiCalc, SuperCalc,* and *CalcStar.* Available in computer stores and bookstores nationwide.
EXPERT SYSTEMS, INC.
P.O. Box 9
Redmond, WA 98052
(206) 881-8970

Services/Consultants

ALASKA

RAMBOW ENTERPRISES
Construction management consultant working with estimating, critical path scheduling, cost forecasting, computer-assisted design, and other construction-related applications of the IBM PC. Software and custom programming is now available.
7-480 A "I" St.
Elmendorf AFB, AK 99506
(907) 753-2291

ARIZONA

UNITED SYSTEMS CORPORATION
Specialists in real-time, 3-D, first-person graphics and game design, we also sponsor the monthly Phoenix IBM PC Ideas Exchange. Give us a call
1074 E. Sandpiper Dr.
Tempe, AZ 85283
(602) 831-9363

CALIFORNIA

CENTIPEDE COMPUTER SYSTEMS
Systems design, programming, and consulting for both large and small users. Educational courses for the novice and the advanced.
148 Beulah St.
San Francisco, CA 94117
(415) 668-3800

COMPUTER TAMERS
Experienced engineers offering assistance and "plain English" advice to business and the professions. Programming services include troubleshooting, maintenance, customization, development, program and data conversion. Equipment services include selection, user orientation, printer adaptation, and media transfer.
COMPUTER TAMERS
1514 Manhattan Beach Blvd.
Los Angeles, CA 90266
(213) 379-1276

dBASE II
Anyone interested in programming, writing applications, teaching or attending classes or users groups in dBASE write to *PC,* c/o Box 682, 1528 Irving, San Francisco, CA 94122.

MICRO PERSONAL CONSULTING
Complete services for the IBM PC. One call does it all. In-depth technical knowledge of hardware and software. Turnkey systems or individual products available. Training and maintenance included. You receive only the products that pass our demanding evaluation. Call Bob Rice, the PC Tutor.
9025 Willis Ave. #114
Panorama City, CA 91402
(213) 892-2057

SHERRY KNIGHT, CPA
CPA firm specializing in computerized accounting applications. We have tested and evaluated all major accounting packages (12) through actual use. Experienced engineering and accounting professionals will help you select and implement your system. General business consultations.
Certified Public Accountant
6644 Heartwood Dr.
Oakland, CA 94611
(415) 339-9036

CONNECTICUT

W.H. JONES & ASSOCIATES, INC.
Customized software for the IBM PC. We currently have six assembly language programmer analysts working on IBM PC projects including PC to CICS file transfer utilities, data bases, word processing, and varied business applications.
52 Oakland Ave. North
East Hartford, CT 06108
(203) 528-1725

DISTRICT OF COLUMBIA

CHENAULT & WILLIAMS
Experienced Big-8 professionals. CDP, CPA, and computer audit certified. Ready to help you select a new system, modify existing systems, or further train your staff.
P.O. Box 11034
Washington, D.C. 20008
(202) 966-2855

FLORIDA

DENNIS M. NAGEL, INC.
Consulting service available for custom hardware and/or software design, product development and application of the IBM PC and other microcomputers. Extensive experience in communications, industrial control, data acquisition, custom microcomputers, games.
455 N.W. 35th St., Ste. D
Boca Raton, FL 33431
(305) 395-9515

PC BlueBook PC BlueBook PC BlueBook

PC: BlueBook PC: BlueBook PC: BlueBook

PC Blue Book PC Blue Book PC Blue Book

BlueBook PC: BlueBook PC: BlueBook PC:

PC BlueBook PC: BlueBook PC: BlueBook PC:

BlueBook PC: BlueBook PC: BlueBook PC:

Software/Job Specific/ General

MATHEMATICAL PROGRAMMING PACKAGE

LP (Simplex and Transportation Algorithms). Includes sensitivity analysis, shadow prices, cost and RHS ranges. Results on screen or printer. Solves 50x60 with 64K. Detailed instructions with examples. $50. Matrix Routines. Inversion of full, symmetric, tridiagonal matrices, solution of linear equations. $20.
MICRO VISION
135 Herzel Blvd.
Lindenhurst, NY 11757
(516) 226-7130

UNITS PLUS

Ultimate program for conversion of units and related tasks. Converts any unit (including all engineering and scientific units) to any other consistent unit. $25. Version for business, home, educational use also available $15. *Tax Shelter* (available December) prepares tax returns, all schedules. Excellent and inexpensive.
MICRO VISION
135 Herzel Blvd.
Lindenhurst, NY 11757
(516) 226-7130

Software/Job Specific/ Insurance

INSURANCE DATA BASE SYSTEM

An in-house system designed for independent agents. It performs managerial, marketing and accounting functions. Transactions are entered daily and up-to-date reports can be generated. The system is interactive and menu-driven for ease of use.
MIRROR IMAGES SOFTWARE INC.
1223 Peoples Ave.
Troy, NY 12180
(518) 274-2335

Software/Job Specific/ Legal

SSI*LEGAL

A comprehensive legal time and billing system for the IBM PC. Supports up to ten lawyers, 15 billing formulas, 25 job types, 300 clients, 1,000 cases and 10,000 current charges via built-in data base system. *SSI*Legal* is powerful and easy to learn and operate. $495.
SATELLITE SOFTWARE INTERNATIONAL (SSI)
288 W. Center St.
Orem, UT 84057
(800) 321-5906, (801) 224-8554

Software/Job Specific/ Medical

POS/1

Physician Office System is a medical billing and accounts receivable system. POS/1 facilities: immediate access to patient status by account number or name, automatic RVS codes retrieval with manual override, receivable aging report and track next visit date. Cost: $950.
CHEN INFORMATION SYSTEMS, INC.
1499 Bayshore Blvd. #205
Burlingame, CA 94010
(415) 692-4358

THRESHOLD

Medical system. 120 programs performing: paper and electronic claims (to Blue Shield, Medicare/aid), statements, A/R analysis, clinical studies, referring physician reports. Features include: on-line help, full security with audit trails, patient name orientation. $5,500. Requires hard disk, 128K, COBOL run-time, PC-DOS.
PHYSICIANS PRACTICE MANAGEMENT, INC.
1810 S. Lynhurst, Ste. Q
Indianapolis, IN 46241
(317) 248-0357

Software/Job Specific/ Real Estate

LOAN AMORTIZATION TABLE

Calculates payment, principal, interest or term. Processes unequal payments, prints full amortization table with annual totals or summary schedule. Easy to use, fully documented. Pays for itself fast at only $29.95.
SKOKIE SOFTWARE
9520 Keduale
Skokie, IL 60076

Software/Job Specific/ Stock Analysis

STOCKCAL

Program to carry out stock analysis calculations using procedures recommended by the National Association of Investment Clubs. Provides for storage and updating of company information on disk files. Requires 64K, one disk drive, 80-column CRT. $39.95.
RLJ SOFTWARE APPLICATIONS
306 N. Wolcott St.
Hillsdale, MI 49242

STOCK OPTIONS ANALYZER

Analyzes option strategies for profit potential with annualized returns and breakeven points. Puts, Calls, Covered Calls, Spreads, Straddles, Margined Covered Calls, Ratioed Covered Calls, Vertical Bear Spreads, Vertical Bull Spreads, Diagonal Bull Spreads, Diagonal Bear Spreads, Variable Spreads. $65.
SYSTEMS & SOFTWARE
220 Redwood Hwy. #121
Mill Valley, CA 94941
(415) 331-5056

Software/Languages

PASCAL BIOSLIP

Use all BIOS functions in Pascal. Color and graphics supported. Full keyboard control. Equipment determination. Everything BIOS can do Pascal can do. $34.95 for diskette and extensive documentation package.
NEXT GENERATION SOFTWARE
144-10 Roosevelt Ave.
Flushing, NY 11354
(212) 762-2833

PC/FORTH

Fast, extensible, interactive language ideal for graphics, communications, and process control application. Package includes interpreter/compiler with memory management, screen editor, assembler, utilities. 150-page manual. Extensions for 8087 numeric processor support, advanced graphics, and cross-compilation also available. Runs under PC-DOS or CP/M-86 with 48K and one disk drive. Prices start at $100.
LABORATORY MICROSYSTEMS, INC.
4147 Beethoven St.
Los Angeles, CA 90066
(213) 306-7412

APL INTERPRETER

Ideal APL for IBM PC, written by Dr. Navin Mehta, author of TISAPL, addresses 1 megabyte and works with monochrome or color adapter. Educational version $280. Professional version has more features than mainframe APL—$480. Minimanual $5; full manual $35. APL character generator $90.
IDEAL COMPUTER SYSTEMS
68 Robie St.
Fundy Trail Mall
Truro, Nova Scotia
B2N 1K8 Canada
(902) 895-8062

SSI*FORTH

SSI*FORTH was developed to provide a clean, powerful, FIG compatible FORTH system for the IBM PC. Contains additional words for easy translation of BASIC programs; complete interface to BIOS and DOS; a screen format to text format conversion capability; plus all other standard FORTH features. $95.
SATELLITE SOFTWARE INTERNATIONAL (SSI)
288 W. Center St.
Orem, UT 84057
(800) 321-5906, (801) 224-8554

C-SYSTEMS/COMPILER/WINDOW

c-systems is a V7 compatible nonfloat c compiler for real-time applications. Optimized assembler source code. 128K, 2 disk drives. $195. c-window is the first source level debugger for c programs. Single step, breakpoint, trace at statement level. Display and change variables using full c expression syntax. Requires c-systems compiler. $125.
C-SYSTEMS
P.O. Box 3253
Fullerton, CA 92634
(714) 879-1123

IBM PC FORTH

The most advanced, up-to-date FORTH package available today. This interactive MVP-FORTH version (a superset of 79 Standard FORTH and FIG FORTH) includes: compiler, interpreter, editor, assembler and extensive graphics and sound. List Price: $150.
MIRROR IMAGES SOFTWARE, INC.
1223 Peoples Ave.
Troy, NY 12180
(518) 274-2335

Software/Mailing Programs

POWERIZE

Powerize your *EasyWriter* or *Volkswriter* with Merge 'n Print. Automatic insertion of variables (from keyboard or file) into form letters, repeat and boiler plate printing, and much more. $100. Use it with our label program to really increase your letter writing power! $75. Both for $150. VISA/MC/MO.
MBS SOFTWARE
12729 NE Hassalo St.
Portland, OR 97230
(503) 256-0130

Software/Personal

PCHMS

A personal computer home management system for personal, business, and household data. Includes printing calculator, letter writer, date and digital display with alarm and metric converter, state area code directory. Monochrome/color. 64K PC-DOS, BASIC $89.95. PCHMS *Auto-Dialer* $69.95.
ARLINGTON SOFTWARE & SYSTEMS
97 Bartlett Ave.
Arlington, MA 02174
(617) 641-0290

PFP-PERSONAL FINANCE PROGRAM

PFP, THE Personal Finance Program for the IBM Personal Computer, is your best software buy. For only $50, you can keep an easily-updatable budget, write checks in user-definable categories, reconcile your bank statement, and so much more. For more information:
DENNIS SOFTWARE SYSTEMS
1510 Eucalyptus Hill Road
Santa Barbara, California 93103
(805) 965-2158

FOR MOM

P.C. Cookbook—over 120-recipe data base. Enjoy preparing meals with special, tested recipes at your fingertips. Everything from appetizers to desserts. Print option. Interactive prompting for recipe selection. Create shopping list. Print copies for your guests. DOS, 64K, one disk drive. $24.95.
HALOS AND ASSOCIATES
7710 N. Hummingbird Ln.
Scottsdale, AZ 85253
(602) 948-8022

P.C. Blue Book P.C. Blue Book P.C. Blue Book

BlueBook PC: BlueBook PC: BlueBook PC:

XF-DUMP FILE UTILITY

Machine language full-screen utility allows Display, Alter (Edit), Print, and Search of files/absolute sectors. Hex and character formats for all functions. All file types supported. Delete, Rename, and List directory functions included. $70.
DISTRIBUTED SOFTWARE SYSTEMS, INC.
P.O. Box 1301
Northbrook, IL 60062
(312) 634-1511

JEL AND JFORMAT

Diskettes provide: Electronic Disk, Print Spooling, and Ten Sector Formats (25% more bytes per diskette). PC-DOS 1.10 support for hard disks, 8-inch floppies, and quad drives (TM100-4). OEM systems available. $50.
TALL TREE SYSTEMS
1036 Los Altos Ave.
Los Altos, CA 94022
(415) 941-5500

BASIC PROGRAM LISTER

Utility to print out basic program listings. Formats each line (max 75 characters), indentation, page numbering, and skips page perforations. Heading provides program name, date, and time. Specify cassette or diskette. Send $19.95 to:
DATA PROCESSING SERVICES
P.O. Box 633
Herndon, VA 22071

UNPROTECTOR

With this program your protected BASIC programs that were accidentally saved on the disk with the P option can be listed, modified, and saved in the unprotected form. Check or money order for $24.95.
ALPHA COMPUTER SERVICE
P.O. Box 2517
Cypress, CA 90630
(714) 894-6806

SOFTSPOOL

Software spooler outputs data to printer while executing any program that runs under DOS. Program execution no longer linked to printer speed. Buffer sizes vary (1–128K). Increases productivity: Ideal for business. $49.95 (Disk, documentation, $2.50 S&H. MC/VISA. MA residents add 5% sales tax.
RICKERDATA
P.O. Box 288
Burlington, MA 01803
(617) 662-0856

UTILITY PROGRAMS

PC/BASICXREF, cross-reference BASIC $19.95;
PC/CODEGEM, BASIC from screen $19.95;
PC/DBASE, powerful data base $49.95;
PC/EDIT, easy and helpful text editor $29.95;
PC/ISAM, an efficient access method $39.95;
PC/LIBRARY, flexible diskette $29.95;
PC/SORT, fast subroutine/program $29.95.
RES CONSULTANTS
2635 Ferry Landing
Sugarland, TX 77478
(713) 980-4385

PC SPOOLER SOFTWARE

Save time and money. Try PC Spooler Software. Print files in background while you continue to work in foreground. Requires mono/printer or printer adapter, DOS 1.0 or 1.10, and SS or DS drive. Instructions included. $45.
MICRORAD ASSOCIATES, INC.
P.O. Box 1759
Kingston, NY 12401
(914) 338-3306

SERIAL PRINTER SOFTWARE + FORTH

SerPrinSoft makes the perfect marriage between any serial printer and your IBM DOS. XON, XOFF, and hardware handshake protocol supported. Now Llist/Lprint/PrtSc key work with your serial printer. By pressing the F key, the FORTH programming language becomes activated. (Consulting available.) $59.95.
INTERNATIONAL COMPUTERS
P.O. Box 13547
Mexico Beach, FL 32410
(904) 648-8484

BASIC AIDS

Structure your source code with page control and line cross-reference. Copy our menu drivers with partial program copy. Use our Global Replace to modify variables. Streamline your programming with function key reload. Order BASIC AIDS PC-DOS SOURCE CODE (65K) $20. Cash for enhancements.
TULSA COMPUTER CONSORTIUM
P.O. Box 14097
Tulsa, OK 74104
(918) 747-0151

ALT-PRTSC

The first language-independent graphics screen print program for IBM or Epson MX-80 printers with Graftrax option. Executed by pressing Alt-PrtSc. No modifications to new or existing programs will ever be necessary. $24.95.
THE SECOND SOURCE
P.O. Box 23567
Washington, DC 20024

DISKETTE UTILITY PROGRAMS

S-DIR, Sorted-DIRectory program, produces diskette directory listings sorted by any field in the directory. Clean-Up facilitates erasing files by displaying file names and asking you if the file should be erased. Professionally typeset documentation fits in the PC-DOS manual. Each utility $25; both $40.
OPTIMUM DATA PROCESSING
P.O. Box 2167
Humble, TX 77347
(713) 454-7428

SUPER ZAP

Super Zap allows access to files/absolute disk sectors. Cursor may be positioned on any byte and byte altered in hex/decimal/octal/ASCII. Sector positioning by binary/ASCII string, offset, sector no., forward/backward scrolling. Other functions: file/sector printing, DIR lift, sector saving, customization. $45.
ALTA SYSTEMS, INC.
P.O. Box 9802 #181
Austin, TX 78766
(512) 836-7351

COMPRESS/DECOMPRESS

Removes all comments from BASIC programs and places as many statements on one line as possible. Can cut program size by 50%. Decompress performs opposite function. Requires 64K, one disk drive. $50. *Star Trek*, a new version of an old classic, $25. Call Andy Mendle.
BYTE ONE
5252 Thorntree
Irvine, CA 92715
(714) 551-9191

HIGH PERFORMANCE ASSEMBLY CODE

Sort handles BASIC string, integer, real arrays. Resequences companion array. Sorts 12,000 integers in 10 sec. $20. Unique Display Sketcher provides mazedrawing, protected fields, full font, colors. $35. Diskette Peek-/Poke unerases files. $20. Manual, source, games (*BJ*, *Mastermind*, *Conway's Life*).
SPECIALTY SOFTWARE
402 Grand Ave.
Capitola, CA 95010
(408) 462-4523

PC TOOLBOX

EDIR-formatted information about files and used/free space. List—file printing with total printer control, heading and forms options. Clock—continuous time on screen with alarm. File Utility—assign/remove "hidden" status, recovers deleted files. Monitor—dynamic switch between color/BW CRTs. $35.
ALTA SYSTEMS, INC.
P.O. Box 9802 #181
Austin, TX 78766
(512) 836-7351

NEW VIDEOGRAPH PLUS

A totally machine language graphics print utility. The PrtSc key triggers automatic printing of four-color shaded graphics or full monochrome character set. Features variable horizontal/vertical sizes, rotated and inverted images. Pictures may also be printed from a disk file or from your own program.
WINDMILL SOFTWARE, INC.
1058 Joan Dr.
Burlington, Ontario
L7T 3H2 Canada
(416) 632-6279

THE NORTON UTILITIES

A comprehensive series to enhance PC-DOS. *DiskLook* displays everything about diskettes; *UnErase* recovers lost files; *SecMod* modifies diskettes; *FileHide* controls hidden files. Buy them individually, or the whole package of over a dozen ($80). See display ad for details.
PETER NORTON
1716 Main St.
Venice, CA 90291

COMONG (PROMID)

Quick, easy way to organize and present menus efficiently. No more modifying source codes of menu program when adding or deleting programs. Offers one main menu and up to 14 submenus with 15 options per menu. $90.
COMSEN, INC.
20-A Erford Rd.
Lemoyne, PA 17043
(717) 737-2049

THE SORT

General Sort/Merge/Select Utility for BASIC, Pascal, FORTRAN, COBOL & MailMerge files. Written in 8088 Assembler. Sequential/random files. External/internal formats. Interac.param-.prep. Only $90.
ORGANIZATIONAL MANAGEMENT SYSTEMS
3 Chickory Ct.
Glen Arm, MD 21057
(301) 668-9011

Software/Word Processing

SOFTWRITE

A word processor so friendly you probably won't need the excellent documentation provided. Word wrap, line insert, PC-DOS files, variable colors, word search, serial or parallel printers, 32K, plus much more. Credit cards accepted. $49.95.
SOFT BYTE
P.O. Box 16506
Seattle, WA 98116
(206) 937-0981

WORD/PC

A user-designed word processor combining simplicity and power. Align, Fill, Copy/Merge, multiple-line spacing. Word Wrap, Centering, Search, Insert/Delete. Word count, three print styles, Help screens, more than 40 features. MAILMERGE/PC and other modules available. Requires 64K, 1 disk drive. VISA/MC. $89.95.
COMPSOFT
9818 W. Bellview
P.O. Box 5049
Littleton, CO 80123
(303) 794-0858

Software/Other

WES

Friendly word processing power with mathematics, mail merge, data base recall, and macro language. Super for boiler plate, invoices, letters, programs, and reports. IBM PC function and cursor keys implemented. Interactive prompts speed learning, use. Manual and 20 practice jobs assure mastery. Seminars. These key-actuated operations immediately update screen: double space, justify, collapse, word wrap, center, move, search, change, delete, undo, buffers, DOS files, macros, margins, tabs (decimal, regular), indent, scrolls (four-way, lock), add, subtract, multiply, divide, put answer, modes (insert, overtype, command), page (headers, footers, footnotes), and print (screenlike copy). $395 ($295 introduction). Manual $30.
WESTERLY BUSINESS SYTEMS
137 Main St.
Westerly, RI 02891
(401) 596-1811

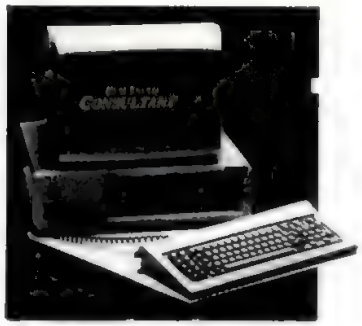
THE UNTERMINAL PROGRAM

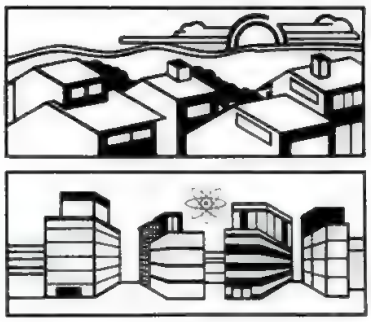
Let *The Unterminal* liberate you from interminable attendance upon your terminal! Simulate ENTIRE INTERACTIVE SESSIONS—PC to PC, DJNS, SOURCE, etc.—cut connect time, reduce repetition. Capture any volume of data, move at will between communication channel (SEND) and disk (READ, WRITE). Inspect, filter incoming data (IFEQUAL, IFINSIDE). Adapt to any protocol—create your own (SET). Reconfigure baud rate, stop bits, word length, parity with ease (INIT). Complete transmission error handling capabilities plus monitor low-level controller events (*SEND*, *TRACE*). *The Unterminal* provides these features and much more in a unique, comprehensive, easy-to-use, communication control language. *Terminal* is just one of 65 key words! $131; manual only, $31. Check or money order.
MONOWAVE CORPORATION
2220 Eastlake East #204
Seattle, WA 98102
(206) 325-7696

PC: BlueBook PC: BlueBook PC: BlueBook PC: Blu

WHERE MEETS . . .

YOU'LL FIND





READY TO SERVE YOU:



Created and Used by Successful Investment Brokers

Amazingly simple operation...

User Flexibility
DOS Basic
No experience necessary for novices or experts.
Excellent screen formats.
Easy to read printouts.
Automatic error protection.
Step-by-step prompting.

Input as per provided questionnaire and screen prompt...

Data Input
28 to 40 variables. One to 120 "what if" entries. Itemized recall/reanalyze.
Handles up to 8 mortgages.

Full user-control of disk files, printer and screen...

Output Data
Format Input Data
Purchase Parameters
Multiple Year Operations
Itemized Categories:
Gross(x), Net(x), Oper(%)
Tax shelters, Profitabilities
Projected resale
Capital Gains Taxation
Syndications, Partnerships
Cash returns, Rates of returns
Projected pyramiding

Professional...precise...yet simple

Documentation
Screen: 80 characters, scroll/stop
Printer: 80 col. @ 8½ w.
Block format
Itemized
Bottomline rate of returns

System Requirements
IBM PC*: 64K
Single Disk-5¼"
DOS Basic
Screen Monitor: 80 chr.
Parallel Printer

CSi CONSULTANT SYSTEMS, INC.
3887 State St. Suite 111
Santa Barbara, CA 93105
(805) 964-7047

Three Years In Development

Now Available For Public Use

An Invaluable Aid to:

Business...

Lenders, Appraisers
In just minutes, hours and days of tedious computations and piles of paperwork are concisely eliminated. Calculating time from 13 to 23 seconds. Professional documentation completed in less than 2 minutes!

Sales...

Agents, Counselors, Marketing-Specialists
Buyers' and sellers' questions are quickly computed, documented and ready for evaluation.

Investment...

Investors, Speculators, Sellers
It's the ultimate tool for exhaustive "what if" situations . . . helps you tailor parameters to your rate of return requirements.

Real Estate...

Individuals, Partnerships, Corporations
You're equipped with an essential decision-making assistant. It tells you if your investments are working for you, if they are stagnant and if they are losing money. It instantly computes your rates of returns per investment.

Education...

Teachers, Students
It's like a complete real estate investment course. Together with the User's Manual it is a full tutorial system, with step-by-step explanations of all Input and Output Data... professionalism at your fingertips.

THE PACKAGE INCLUDES:
Program Diskettes
Demonstration Documents
User's Manual (100 page)
Packet of Questionnaire Blanks
Only $195

WHEN YOU WANT TO GO BEYOND WORD PROCESSING & TEXT EDITING . . .
AND THEN BEYOND SPREADSHEET MODELS, TEMPLATES AND MODULES . . .
WHEN YOU WANT A SOFTWARE PACKAGE THAT IS "USER FRIENDLY",
"ERROR PROTECTED","TOTALLY MENU DRIVEN", & WITH "COMPREHENSIVE PRINTOUTS"...
THEN, GO ONE-STEP-BEYOND, WITH THE REAL ESTATE CONSULTANT,™
AND TRULY UTILIZE THE COMPUTING POWER OF YOUR IBM PC . . .*

It is said that a picture speaks a thousand words . . . we'll let the printouts, on the following page, speak for the Real Estate Consultant™

**IBM PC is a registered trademark of IBM*

The REAL ESTATE CONSULTANT™

The following reproductions are actual printouts computed and generated on the IBM PC* using DOS BASIC 1.0 they do not however, represent, the full capabilities of the software package.

1) PGM: INVESTMENT ANALYSIS # 1
2) FOR: JAMES REALTY COMPANY
3) PROPERTY ADDRESS CODE: 56 UNITS SANTA CALIF.
4) DATE: MARCH 02 1982

****PROPERTY DATA INPUT****

5) PRICE OF PROPERTY	=	2,000,000
6) DOWN PAYMENT	=	500,000
7) AMOUNT OF $ 1st LOAN	=	1,000,000
8) INTEREST RATE 1st LOAN	=	10.00
9) NO. YRS. 1st AMORTIZED	=	INTEREST ONLY
10) NO. OF PAYMENTS/YEAR?	=	12
11) AMOUNT OF THE 2nd LOAN	=	300,000
12) INTEREST ON 2nd LOAN	=	9.25
13) NO. YRS. 2nd AMORTIZED	=	30.00
14) NO. OF PAYMENTS/YEAR	=	12
15) INITIAL CLOSING COSTS	=	30,000
16) ANNUAL TAX PAYMENTS?	=	24,000
17) ANNUAL INSURANCE COST	=	6,000
18) OTHER OPERATION COSTS	=	40,880
19) % VACANCY FACTOR	=	5.00
20) MONTHLY INCOME	=	19,247
21) % ANNUAL RENT RAISE	=	9.00
22) YOUR INC.TAX BRACKET	=	40
23) DEPRECIABLE AMOUNT	=	1,600,000
24) DEPRECIATION METHOD	=	100
25) DEPRECIABLE YEARS	=	15
26) % SALE COMMISSION	=	5.00
27) % OTHER SALE COSTS	=	1
28) PROJ. RESALE GRs (OR)	=	9.75
29) % APPRECIATION/YEAR	=	8.00

30)*** PARTNERSHIP DATA ***

31) SYNDI. FEE OF PROFIT	=	15
32) %GENERAL PARTNER TAKE	=	40.00
33) AMT G.P.CASH INVESTED	=	150,000
34) %LIMITED PARTNER TAKE	=	60.00
35) % OTHER TYPE FEES	=	2.00

36)**OTHER MORTGAGES DATA**

37) AMOUNT OF MORTGAGE	=	200,000
38) % INTEREST RATE	=	9.50
39) NO. OF YRS. AMORTIZED	=	25.00
40) NO. OF PAYMENTS/YEAR	=	12

(OUTPUTS)

CURRENT PURCHASE DATA

MO.PYMNT 1st LOAN	=	8333.33
MO.PYMNT 2ND LOAN	=	2468.03
OTHER MORTG. PYMNT.	=	1747.39
MONTHLY OPER. EXPS.	=	5906.67
MONTHLY COSTS	=	18435.42
CAPITALIZATION RATE	=	7.43
NET MULTIPLIER	=	13.46
GROSS MULTIPLIER(X)	=	8.66
NET OI/DEBT SERVICE	=	0.99
OPER. EXP. RATIO %	=	30.69

	YR/END 1	YR/END 2	YR/END 3	YR/END 4
INCOME DATA				
GROSS INCOME	230,964	251,751	274,408	299,105
-VACANCIES	11,548	12,588	13,720	14,955
-OPERATION COSTS	70,880	77,259	84,213	91,792
=NET OPER'G INCOME	148,536	161,905	176,476	192,359
-1st MORTG. PYMNT.	100,000	100,000	100,000	100,000
-2nD MORTG. PYMNT.	29,616	29,616	29,616	29,616
-OTHER MORTG.PYMNT.	20,969	20,969	20,969	20,969
=ANNUAL CASH FLOW	-2,049	11,319	25,890	41,773
% C.F. RETURN PER YEAR=	-0.39%	+2.14%	+4.89%	+7.88%
****TAX DATA****				
NET OPERATING INCOME=	148,536	161,905	176,476	192,359
-INTEREST EXPENSE	146,582	146,189	145,758	145,285
+INTEREST DISALLOWED	0	0	0	0
-DEPRECIATION	106,667	106,667	106,667	106,667
=TAXABLE INCOME	-104,712	-90,950	-75,948	-59,593
CASH TAX SAVINGS	41,885	36,381	30,380	23,838
YIELD ON TAX SAVINGS	+7.90%	+6.86%	+5.73%	+4.50%

THE FOLLOWING INDICATE RESULTS AFTER SALE.

****SALE DATA****				
SALE PRICE=	2,454,570	2,675,481	2,916,275	3,178,740
-1st LOAN BALANCE	1,000,000	1,000,000	1,000,000	1,000,000
-2nd LOAN BALANCE	298,053	295,917	293,576	291,008
-OTHER MORTG. BALANCES	197,944	195,683	193,198	190,466
=EQUITY	958,573	1,183,881	1,429,502	1,697,266
-SALE COMMISSION	122,729	133,774	145,814	158,937
-SALES COSTS	24,546	26,755	29,163	31,787
-TAX DUE ON CAP.GAINS	61,434	111,726	165,008	221,549
-TAX DUE ON DEPRE.RECAP	0	0	0	0
=SALES PROCEEDS	749,865	911,627	1,089,317	1,284,993
TAXABLE INCOME AT SALE				
CAPITAL GAINS INCOME	383,962	698,286	1,031,298	1,384,682
DEPRE. RECAP.INCOME	0	0	0	0
****PROFITS****				
SALE PROCEEDS	749,865	911,627	1,089,317	1,284,993
-DOWN PAYMENT	500,000	500,000	500,000	500,000
-INITIAL CLOSING COST	30,000	30,000	30,000	30,000
=NET SALE PROFIT	219,865	381,627	559,317	754,993
TOTAL NET GAINS				
NET SALE PROFIT	219,865	381,627	559,317	754,993
- SYNDICATION FEE	32,980	57,244	83,928	113,249
-OTHER TYPE FEE	4,397	7,633	11,190	15,100
= NET PROFIT RETURN	182,488	316,750	464,399	626,644
GEN.PTR. CASH PROFIT	72,995	126,700	185,760	250,658
LTD.PTR. CASH PROFIT	109,493	190,050	278,640	375,986
** TOTAL NET % GAIN **				
NET PROFIT RETURN	182,488	316,750	464,399	626,644
/(DWN.PYMT+CLOS.COST)	530,000	530,000	530,000	530,000
% NET SALE PROFITS	+34.43%	+59.76%	+87.62%	+118.23%
% TOTAL CASH FLOWS	-0.39%	+1.75%	+4.64%	+14.52%
% TOTAL TAX SAVINGS	+7.90%	+14.76%	+20.49%	+24.99%
= % TOTAL NET RETURNS	+41.94%	+76.27%	+114.75%	+157.74%
/ NO. OF YEARS (CMPD)	1	2	3	4
= % RETURN/YEAR (CMPD)	+41.94%	+32.77%	+29.02%	+26.71%
% GENRL.PTR.GAINS	+48.66%	+84.47%	+123.84%	+167.11%
% GEN.PTR. CASH FLOWS	-0.55%	+2.47%	+9.38%	+20.52%
% GEN.PTR. TAX SAVINGS	+11.17%	+20.87%	+28.97%	+35.33%
= % TOTAL GEN.PTR.RETURN	+59.28%	+107.81%	+162.19%	+222.95%
/ NO. OF YEARS (CMPD)	1	2	3	4
= GEN.PTR. RTN/YR.(CMPD)	+59.28%	+46.16%	+37.89%	+36.06%
%LIMITED PTR.GAINS:	+28.81%	+50.01%	+73.33%	+98.94%
% LTD.PTR.CASH FLOWS:	-0.32%	+1.46%	+5.35%	+12.15%
+ % LTD.PTR.TAX SAVED:	+6.61%	+12.36%	+17.15%	+20.92%
= % TOTAL LTD. RETURN:	+35.10%	+63.83%	+96.03%	+132.01%
/ NO. OF YEARS (CMPD)	1	2	3	4
= LTD.PTR. RTN/YR.(CMPD)	+35.10%	+28.00%	+25.15%	+23.42%

the Real Estate CONSULTANT
(C) CONSULTANT SYSTEMS INC.
Santa Barbara CA 93105

SUM OF THE YEARS TAX DEPRECIATION
(C) CONSULTANT SYSTEMS INC.

PRICE = $ 2,000,000
SALVAGE VALUE = $ 400,000
NET DEPRECIABLE = $ 1,600,000
LIFE = 15 YEARS
METHOD = 0 %
STARTING MONTH = 1

YEAR	DEPRECIATION	BALANCE
1	200,000	1,400,000
2	186,667	1,213,333
3	173,333	1,040,000
4	160,000	880,000
5	146,667	733,333
6	133,333	600,000
7	120,000	480,000
8	106,667	373,333
9	93,333	280,000
10	80,000	200,000
11	66,667	133,333
12	53,333	80,000
13	40,000	40,000
14	26,667	13,333
15	13,333	0

DECLINING BALANCE TAX DEPRECIATION
(C) CONSULTANT SYSTEMS INC.

PRICE = $ 2,000,000
SALVAGE VALUE = $ 400,000
NET DEPRECIABLE = $ 1,600,000
LIFE = 15 YEARS
METHOD = 175 %
STARTING MONTH = 1

YEAR	DEPRECIATION	BALANCE
1	186,667	1,413,333
2	164,889	1,248,444
3	145,652	1,102,793
4	128,659	974,133
5	113,649	860,485
6	100,390	760,095
7	88,678	671,417
8	78,332	593,085
9	69,193	523,892
10	61,121	462,771
11	53,990	408,781
12	47,691	361,090
13	42,127	318,963
14	37,212	281,750
15	32,871	248,880

DECLINING BALANCE TAX DEPRECIATION
(C) CONSULTANT SYSTEMS INC.

PRICE = $ 2,000,000
SALVAGE VALUE = $ 400,000
NET DEPRECIABLE = $ 1,600,000
LIFE = 15 YEARS
METHOD = 125 %
STARTING MONTH = 1

YEAR	DEPRECIATION	BALANCE
1	133,333	1,466,667
2	122,222	1,344,444
3	112,037	1,232,407
4	102,701	1,129,707
5	94,142	1,035,564
6	86,297	949,267
7	79,106	870,162
8	72,513	797,648
9	66,471	731,178
10	60,931	670,246
11	55,854	614,392
12	51,199	563,193
13	46,933	516,260
14	43,022	473,238
15	39,437	433,802

STRAIGHT LINE TAX DEPRECIATION
(C) CONSULTANT SYSTEMS INC.

PRICE = $ 2,000,000
SALVAGE VALUE = $ 400,000
NET DEPRECIABLE = $ 1,600,000
LIFE = 15 YEARS
METHOD = 100 %
STARTING MONTH = 1

YEAR	DEPRECIATION	BALANCE
1	106,667	1,493,333
2	106,667	1,386,667
3	106,667	1,280,000
4	106,667	1,173,333
5	106,667	1,066,666
6	106,667	960,000
7	106,667	853,333
8	106,667	746,666
9	106,667	640,000
10	106,667	533,333
11	106,667	426,666
12	106,667	320,000
13	106,667	213,333
14	106,667	106,666
15	106,667	-0

AMORTIZATION SCHEDULE
(C) CONSULTANT SYSTEMS INC.

LOAN AMOUNT = $ 300,000.00
MONTHLY PAYMENT = $ 2,468.03
INTEREST RATE = 9.250%
STARTING YEAR = 82
STARTING MONTH = 1
DAY PAYMENT DUE = 15

DATE	INTEREST	PRINCIPAL	BALANCE
Interest For 81	0.00		
Jan/ 15 / 82	2,312.50	155.53	299,844.47
Feb/ 15 / 82	2,311.30	156.73	299,687.74
Mar/ 15 / 82	2,310.09	157.94	299,529.80
Apr/ 15 / 82	2,308.88	159.15	299,370.65
May/ 15 / 82	2,307.65	160.38	299,210.27
Jun/ 15 / 82	2,306.41	161.62	299,048.65
Jul/ 15 / 82	2,305.17	162.86	298,885.79
Aug/ 15 / 82	2,303.91	164.12	298,721.67
Sep/ 15 / 82	2,302.65	165.38	298,556.29
Oct/ 15 / 82	2,301.37	166.66	298,389.63
Nov/ 15 / 82	2,300.09	167.94	298,221.69
Dec/ 15 / 82	2,298.79	169.24	298,052.45
Interest For 82	27,668.81		
Jan/ 15 / 83	2,297.48	170.56	297,881.91
Feb/ 15 / 83	2,296.17	171.86	297,710.05
Mar/ 15 / 83	2,294.85	173.18	297,536.87
Apr/ 15 / 83	2,293.51	174.52	297,362.35
May/ 15 / 83	2,292.17	175.86	297,186.49
Jun/ 15 / 83	2,290.81	177.22	297,009.27
Jul/ 15 / 83	2,289.45	178.58	296,830.69
Aug/ 15 / 83	2,288.07	179.96	296,650.73
Sep/ 15 / 83	2,286.68	181.35	296,469.38
Oct/ 15 / 83	2,285.28	182.75	296,286.63
Nov/ 15 / 83	2,283.88	184.15	296,102.48
Dec/ 15 / 83	2,282.46	185.57	295,916.91
Interest For 83	27,480.82		
Jan/ 15 / 84	2,281.03	187.00	295,729.91
Feb/ 15 / 84	2,279.58	188.45	295,541.46
Mar/ 15 / 84	2,278.13	189.90	295,351.56
Apr/ 15 / 84	2,276.67	191.36	295,160.20
May/ 15 / 84	2,275.19	192.84	294,967.36
Jun/ 15 / 84	2,273.71	194.32	294,773.04
Jul/ 15 / 84	2,272.21	195.82	294,577.22
Aug/ 15 / 84	2,270.70	197.33	294,379.89
Sep/ 15 / 84	2,269.18	198.85	294,181.04
Oct/ 15 / 84	2,267.65	200.38	293,980.66
Nov/ 15 / 84	2,266.10	201.93	293,778.73
Dec/ 15 / 84	2,264.54	203.49	293,575.24
Interest For 84	27,274.69		
Jan/ 15 / 85	2,262.98	205.05	293,370.19
Feb/ 15 / 85	2,261.40	206.63	293,163.56
Mar/ 15 / 85	2,259.80	208.23	292,955.33
Apr/ 15 / 85	2,258.20	209.83	292,745.50
May/ 15 / 85	2,256.58	211.45	292,534.05
Jun/ 15 / 85	2,254.95	213.08	292,320.97
Jul/ 15 / 85	2,253.31	214.72	292,106.25
Aug/ 15 / 85	2,251.65	216.38	291,889.87
Sep/ 15 / 85	2,249.98	218.05	291,671.82
Oct/ 15 / 85	2,248.30	219.73	291,452.09
Nov/ 15 / 85	2,246.61	221.42	291,230.67
Dec/ 15 / 85	2,244.90	223.13	291,007.54
Interest For 85	27,048.66		

THE REAL ESTATE *CONSULTANT*™
for the IBM PC*

Please Send_____Copies @ $195. ea.

For: ☐ 1 Drive ☐ 2 Drives

Charge: ☐ Visa ☐ Master

Card # _____

Expiration Date:_____

authorized signature

name

address

city *state*

zip *(area code) phone*

Phone orders accepted (805) 964-7047

CONSULTANT SYSTEMS INC.
3887 State St., Suite 111,
Santa Barbara, CA 93105

CSi

IBM PC is a registered trademark of International Business Machines
The Real Estate Consultant is a trademark of Consultant Systems Inc.

New On The Market

HARDWARE

Maxram

A plug-in, expandable memory board that provides from 64K up to 1 megabyte of memory with optional error correction. It uses 64K-bit chips to provide memory expansion and is designed to handle 256K-bit chips when they become available for quantity purchase. It doesn't require wait states and includes full parity error detection.

Hooks for an optional EDC/ASYNC board are provided for single- and double-bit error correction. An IBM-compatible async port is also provided. *(List Price: 64K $350; 128K $460; 192K $570; 256K $680; 320K $780; 384K $880; 448K $980; 512K $1,080)*

Micro Synergy, Inc.
1327 Whitacre Dr.
Clearwater, FL 33516
(813) 535-6655

Save-a-Slot

A piggy-back board that allows up to 256K of dynamic memory to be placed on the system (mother) board of the PC. Installation eliminates the need to use an expansion slot. The board is available either in kit form for user installation or as a fully installed and tested board. *(List Price: Bare circuit board $49.95; fully socketed, 256K board installed $649.95)*

System 300
3030B Q St. #125
Sacramento, CA 95816
(916) 452-1476

8 Port Serial I/O Board

A board that supports the connection of up to eight terminals for implementing multiuser operating systems. It allows several users to have access to each other's data at the same time. The board uses eight of the asynchronous controller chips that IBM uses on its serial card. The pinouts are female, however, so the PC acts as a host instead of a terminal. The port addresses and interrupts are switch selectable. The communication parameters can be configured in software.

The board comes with a bracket that can be mounted on the rear panel of the PC and which holds up to 16 DP-25 connectors. The bracket is available separately, and can be used for mounting connectors for other multipurpose boards. *(List Price: $950; bracket only, $50)*

Control Systems
2855 Anthony Ln.
Minneapolis, MN 55418
(612) 781-5043



Anchor Pad Locking PC Stand, Anchor Pad Inc.

Microline 84

A 136-column, letter-quality-capable dot matrix printer with dot addressable graphics and proportional spacing. Because it prints in both letter quality and data processing modes, it can handle both word processing and systems applications.

Features include superscripts/subscripts and underlining; a choice of friction or tractor-fed forms handling; 72 by 72 and 144 by 144 dot-addressable graphics; a down-line loadable font of 64 characters; proportional spacing in letter quality mode, and a 12-channel Electronic Vertical Format Unit. *(List Price: Parallel $1,395; serial $1,495)*

Requires: Cable.

Okidata Corp.
111 Gaither Dr.
Mt. Laurel, NJ 08054
(800) OKIDATA
(609) 235-2600

Memory Expansion Kit, Floppy Drive Controller

These 16K memory chips (speed not available) expand system board memory. The floppy drive controller board is compatible with the PC's floppy disk drives or the manufacturer's own internal and external floppy disk drives. The board plugs into the position 5 slot on the system board's I/O and connects to the internal drives. The controller can use dual-headed drives. External drives can be connected to the board at the rear of the system. An internal floppy cable is included. *(List Price: 16K expansion kit $25; floppy drive controller $195)*

Maynard Electronics
P.O. Box 3322
Longwood, FL 32750

M-192

A memory expansion board with 192K RAM. The board was designed to be installed by users and has no switch to set. It comes with a 1-year warranty. *(List Price: $425)*

Requires: 64K.

Chintronics Co.
19 Longmeadow Rd.
Chelmsford, MA 01824
(617) 256-7862

External Drives

A single/dual drive 5¼-inch disk external drive system. The system includes Tandon TM100-1 drives, cable, cabinet, and power supply. An internal switch setting is necessary for PC-DOS to recognize the drives. *(List Price: Two single-sided drives $665)*

Requires: Internal disk controller.

Peripheral Technology
3760 Lower Roswell Rd.
Marietta, GA 30067
(404) 973-0042

Color Graphics Controller

A color graphics controller with 1,024 by 1,024 resolution. The controller makes the monitor into a graphics terminal for industrial applications such as

New on the Market does not review products, but reports information provided by the manufacturer. If you have a product you would like to have included in this section, send a brief description that includes applications, price, and system requirements to New on the Market, PC, *1528 Irving St., San Francisco, CA 94122. Photographs and illustrations are run on a space-available basis.*

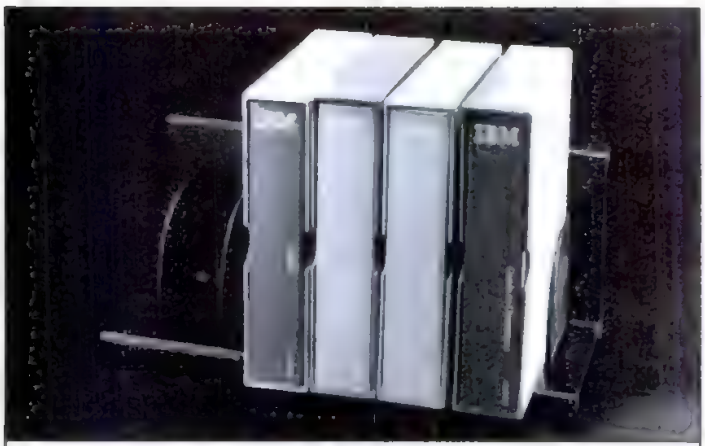
New On The Market

CAD/CAM. The initial software included with the board is a callable graphics library running under DOS or Qunix.

The controller mixes graphics with text in the mixed mode. In the character mode up to 262,000 characters can be stored in memory, representing up to 80 pages of normal text. High resolution allows much smaller characters and more font variations. New fonts can be coded into ROM and changed easily. The controller comes with both TTL output and EIA RS-343 standard RBS output. Other features include: 16 colors, 16:1 zoom, pan, scroll and paging, light pen, and TTL and RGBS output. *(List Price: 128K $2,495; 512K $3,195)*
Control Systems
2855 Anthony Ln.
Minneapolis, MN 55418
(612) 781-5043

program listings by writing over displayed graphic images. The graphic resolutions are achieved by a second memory plane, which can be merged with the basic memory plane to form a composite display. The two planes may be displayed either independently or simultaneously to create the overwrite feature.

The adapter occupies one expansion slot and is not slot sensitive. An integrated parallel printer port saves an expansion slot for other needs. The adapter is compatible with all existing IBM software. *(List Price: $995 including documentation and start-up software)*
Plantronics/Frederick Electronics Corp.
7630 Hayward Rd.
P.O. Box 502
Frederick, MD 21701
(301) 662-5901



Manual Rack, Nat Hellman III Inc.

Colorplus

A color/graphics adapter that can produce high-resolution multicolor graphics. It provides high-resolution (640 by 200 pixels), 4-color, 80-character graphics or medium-resolution (320 by 200 pixels), 16-color, 40-character graphics.

The adapter helps debug

M197 Color Graphics Interface

A color graphics interface with resident memory expansion and 16-color capability. The interface has 128K bytes of RAM operating in one of two memory-mapped modes. Mode 1 uses 32K RAM for graphics while the remaining 96K can be used as standard memory expansion with DOS or applications software. Access to the memory is transparent to the video display.

In Mode 1, users can select one of six available graphics modes, including 16-color, 320 X 200 and four-color, 640 X 200. The high-resolution mode, Mode 2, utilizes the entire 128K for display, supporting four-color, 640 X 400 and 16-color, 320 X 400.

The interface is supplied with an enhanced high-resolution light pen circuit and has the ability to operate as a monochrome video display adapter. *(List Price: Not available)*
Micro Integrations Inc.
P.O. Box 519
Yorktown Heights, NY 10598
(914) 245-3416

Graphics Adapter

A single-slot graphics adapter that allows high-resolution graphics to be displayed on the PC's monochrome display. Graphic resolution is 720 by 350 pixels. The display is bit-mapped and provides two pages of graphic memory. The text and graphics display memory are independent; all combinations of text and graphics displays can be selected by software.

The adapter comes with an IBM-compatible joystick adapter to allow the connection of a graphical input device. Full software support is provided, including a package of BASIC-equivalent graphics routines that can be called from Pascal, FORTRAN, or other high-level languages. These can also be used from within BASIC. *(List Price: $495)*
Requires: 64K, one disk drive.
Orchid Technology, Inc.
1084 Hillview Dr.
Milpitas, CA 95035
(408) 942-8660

ACCESSORIES

Epson Nylon Ribbon Replacement Cartridge

A nylon replacement cartridge for Epson MX printers. The cartridge is available in black, red, blue, green, and brown. *(List Price: MX100 ribbons $13; MX70/MX80 ribbons $8.50)*
Aspen Ribbons, Inc.
1700 N. 55th St.
Boulder, CO 80301-2796
(800) 525-0646, (303) 444-4054
Telex: 45-0055

Storage and Protection Accessories

Four accessories for the PC. The keyboard dust cover is made of rigid smoked-bronze plastic and is individually bagged and boxed.

The disk drive cover is made of black plastic and protects the front of the disk drive(s) from dust. A vinyl foam seal around the perimeter helps prevent damage.

The carrying case contains high-density foam padding that holds the system unit, keyboard, disk box, and manuals in place for protection during transport. The case is made of high-strength, lightweight plastic with an aluminum frame.

The manual rack is made of black plastic and has individual spaces for six system manuals. *(List Price: Keyboard dust cover $12; disk drive cover $8; carrying case $120; manual rack $24)*
Nat Hellman III Inc.
5951 E. Firestone Blvd.
South Gate, CA 90280
(213) 773-3576

Anchor Pad

A three-tiered computer security system that guards the PC's components against theft. Each component is individually secured, permitting quick and

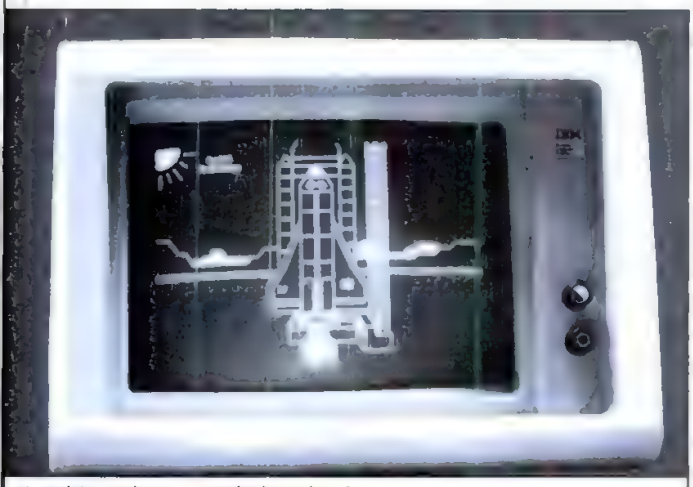
Don't Do It!

Don't order anything until you read the ad on page 58!

Always Better Software from



6924 Riverside Drive
Dublin, Ohio 43017
614/889-5083
CompuServe 71535,1670



Graphics Adapter, Orchid Technology

easy removal for service and relocation. The Anchor Pad increases ventilation, maximizes desk space, and swivels 360 degrees. It will not damage furniture or equipment.

Pads are also available for the keyboard and other equipment such as telephones and typewriters. *(List Price: $445 including delivery and installation)*
Anchor Pad, Inc.
3224 Tatcher Ave.
Marina Del Rey, CA 90291
(213) 306-3881

SOFTWARE

Data Design

A menu-driven data base manager that supports multiple user-defined data tables and input/output (I/O) forms. The forms are used as a window into the data table. Users can enter, browse, change, and print information. Because users can create 26 different forms for each table, they can see the data table in different ways.

Other features include user definable record size, field type, and width. User-definable print formatting is available for custom reports. Information can be retrieved by users in ascending and descending order.

The program includes several ready-to-use forms such as mail-list management and a simplified accounts receivable system. *(List Price: Software and manual $225; Query Language $75)*
Requires: 128K, one floppy disk drive or one hard disk drive (printer recommended).
Insoft, Inc.
10175 S.W. Barbur Blvd. #202B
Portland, OR 97219
(503) 244-4181

C88

A software development package that consists of a compiler for C language, a linkage editor, and a library of functions. The compiler accepts a large subset of the C programming language (as developed by Bell Laboratories). An L88 linkage editor that comes with the program allows modules and functions to be linked together, either by direct conversational interaction with the user, or via linking instructions contained in a command file. The linker produces a map of symbols to aid in debugging.

The library contains numerous routines and functions that are used in systems tape programming and can be accessed via the L88 linker. These functions include: shell sort, sequential disk I/O package, random disk I/O package, screen and cursor I/O package, keyboard handling routines, string manipulation routines, memory and I/O device access routines, and operating system interface routines. *(List Price: $250 including documentation)*
Requires: 64K, two disk drives.
Intellect Associates Inc.
P.O. Box 365
Holbrook, NY 11741

Pairstat

A statistics program that provides a collection of tools to evaluate and present X-Y plotted data. The program includes data entry, computation, and editing features. Users can enter data for scattered-point or smooth line plotting. Up to 1,000 data pairs can be used and up to 11 different data sets can be plotted on one graph. Up to 20th order polynomial regressions can be performed.

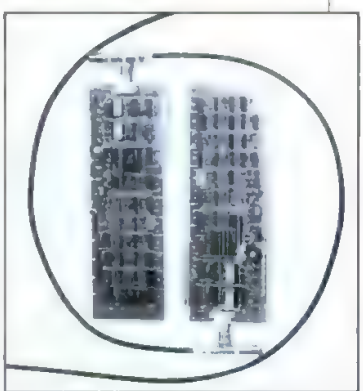
Statistical results include R square, standard deviation, plot of residuals, beta, standard error of coefficients, and mean. Users can define functions to manipulate data, and seven different types of reports can be generated on the printer. *(List Price: $150; discounts are available for user groups)*
Requires: 64K, one disk drive, 80-column display, printer. (When using an Epson printer, the Graphtrax option is required for smooth line plotting.)
Davell Custom Software
P.O. Box 4162
Cleveland, TN 37311
(615) 336-3055

Video Link 88

A menu-driven communications package that allows the PC to function as an intelligent terminal capable of acquiring and recording information from other computer systems. The program offers full-featured communications support and requires no previous knowledge or communications experience.

Under the program, the PC can access or link itself to a variety of remote systems: other IBM PCs; microcomputers; minicomputers; networks such as The Source, Dow Jones, Telenet, Tymnet, Datapac; and time-sharing systems.

Other features include full support for the Hayes Smartmodem, support for both acoustic couplers and direct connect modems, and select data transfer rates of up to 1200 baud. Communication sessions can be selectively recorded to disk or printer and data can be saved and transmitted both to and from remote systems. Users can redefine terminal specifications to suit their requirements. *(List Price: $59.95)*
Requires: 64K, one disk drive, asynchronous communications



PCnet, a local area network, Orchid Technology

card, modem of up to 1200 baud.
Windmill Software Inc.
1058 Joan Dr.
Burlington, Ontario
Canada L7T 3H2

PCText

A text processing program that can be used with any text editor to produce formatted documents. *PCText* can be used to

New On The Market

create large documents with many chapters or subsections. Each of those chapters or subsections can be edited separately using a standard text editor and then formatted as one large document using the "embed" capability of *PCText*.

The program uses simple commands that are contained in the data file to perform functions such as: indentation, centering, line spacing, margin control, page numbering, pagination, and numbering and embedding one document within another. *(List Price: $100 including documentation and manual)*
Requires: 48K, one disk drive, printer.
Intellect Associates Inc.
P.O. Box 365
Holbrook, NY 11741

Window

A full-screen text editor that can be used to create or edit textual documents, correspondence, or programs in any of the PC-compatible languages. The program can be used by inexperienced users and takes advantage of both screen and keyboard capabilities. All the inscribed keys, including ScrollLock, INS, Del, PgUp, and PgDn are fully compatible with the program. Many of the normal editing functions are supported by single strokes of the function keys.

Standard ASCII files are created and maintained by the program. The files can be used with a variety of programs and languages, including BASIC, Pascal, FORTRAN, assembly, C88, and most of the utilities and applications packages available for the PC. *(List Price: $150 including a comprehensive tutorial manual)*
Requires: 64K, one disk drive.
Intellect Associates Inc.
P.O. Box 365
Holbrook, NY 11741

WES

A word processor with math capability. The program integrates visual editing, printing, mail merge, data base recall, and nonformula math. The math feature allows operators or a macro command to +, -, *, /, or % any number in the text into an accumulator. Answers can be replaced into the text where desired.

Interactive prompts give operators the power to control the paging, printing, mail merging, and data base recalling activities as they occur. When using the mail merge and data base recall, users can draw facts and numbers from any ASCII file. This information can be gathered whether it was created by *WES*, another word processor, or as output from a BASIC, FORTRAN, COBOL, or other data processor.

Features include: file crash recover, outside file get and put, multiple text buffers, and macro language. Control of margins, tabs, word wrap, indention under multiple format lines, and reverse of kills and deletes. *(List Price: $395)*
Requires: 42K; CP/M-80, CP/M-86 or DOS.
Westerly Business Systems
137 Main St.
Westerly, RI 02891
(401) 596-1811

Demo Review

A business software demonstration package that lets business users test *SuperCalc*, *SpellGuard* and *Office Integrator* for up to 6 months. One function in each of the programs is encrypted, however, under SoftLok. To use all the program features, the user must pay the balance of the full price. A copy of the key code to unscramble the encryption will be forwarded. *(List Price: $49.95 including manual, demonstration program, and full program in encrypted form)*
Requires: 48K, one disk drive, DOS or CP/M-86.
SoftLink
3255-2 Scott Blvd., Ste. A
Santa Clara, CA 95051
(408) 988-8011



Keyboard Dust Cover, Nat Hellman III Inc.

PC-Spooler

A software program that handles printing files, thus freeing the computer for other work. Printer adapters require a one-wire cable modification. Instructions are included. *(List Price: $45)*
Requires: One disk drive; monochrome display and printer adapter or printer adapter alone; DOS 1.0 or 1.10.
Microrad Associates, Inc.
P.O. Box 1759
Kingston, NY 12401
(914) 338-3306

PCnet

A local area network with full system software support. Under the *PCnet* system a group of PCs can share one or more hard disk units, thereby eliminating floppy storage "disk jockeying." Files can be shared and transferred between users. A protection system ensures that only the file's owner can erase it. The system works with PC-compatible hard disk units.

PCnet provides high speeds (nearly 1M bps) and a long-distance (up to 7,000 feet) network. Its large address space (up to 64,000 nodes) eliminates expansion problems. For multi-PC applications, such as accounting or inventory control systems, *PCnet* provides simultaneous file access interlock and a general purpose network semaphore system to lock records within a file. *PCnet* provides resource sharing and multitasking. Peripheral equipment, such as a

letter quality printer attached to one PC, can be shared by all other PCs. Remote commands are queued, and the user is notified when they are completed.

The system software package is DOS 1.10-compatible and is included with each *PCnet* adapter. It consists of both the operating software and configuration utilities. *(List Price: $699)*

Requires: 64K, one disk drive.
Orchid Technology, Inc.
1084 Hillview Dr.
Milpitas, CA 95035
(408) 942-8660

Qunix

An operating system based on the UNIX operating system. Qunix includes hierarchical file structure to let users organize files by topics. File access security by password prevents files from being read, changed, or executed by others. Qunix allows users to communicate with any other computer, personal or mainframe, through a telephone line or cable.

The command language lets users tailor the system to their particular needs by writing new commands or combining old ones. The file utilities feature includes commands for printing, sorting, comparing, and backing up files. The operating system is compatible with a variety of disk drives, modems, and printers. It can also read disks written under DOS. *(List Price: $950)*

Requires: 96K, two disk drives.
Quantum Software Systems
7219 Shea Ct.
San Jose, CA 95139
(408) 629-9402

Seed

A data base management system that supports both hierarchical and network data. The program can be used as an applications development tool or as a decision support system. Users do not have to know how data is managed within the computer system.

The program consists of a data description kernel and a data manipulation interface for Pascal and FORTRAN. An interactive data manipulation processor, query language (Harvest), a report writer (Bloom), a screen designer, file converters, and maintenance utilities are included. *(List Price: $995; transaction processing option $795; documentation only, $100)*

Requires: 320K, one disk drive.
Micro Decisionware
4890 Riverbend Rd.
Boulder, CO 80301
(303) 443-2706

Stockvue

A program that helps stock brokers and individual investors calculate potential profits and risks on investments. Stock or option traders can use the program to answer "what if" questions and implement that information to make investment decisions.

The program posts relevant data on a single screen in spreadsheet format. Investors can scan the information, change variables, and consider other options. Included with the spreadsheet display are calculations of dividends, interest (margined trades), trade commissions, and exact opening cost according to the Securities and Exchange Commission's rules on margin requirements. The program is available on disk or cassette. *(List Price: $129.95)*

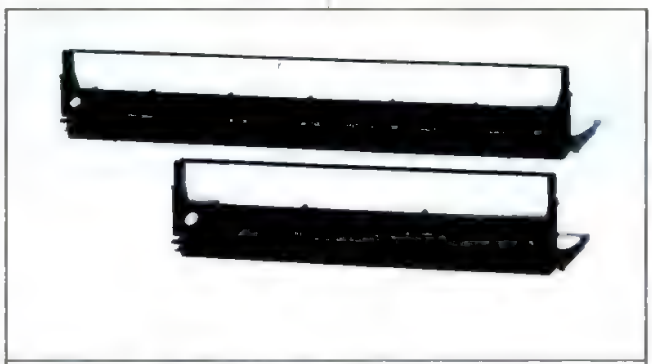
Requires: 64K, one disk drive.
Star Value Software
12218 Scribe Dr.
Austin, TX 78759
(512) 837-5498

SoftCable

A print spooler for all common serial printers that adapts to the control lead and protocol requirements of various printers through software configuration. Buffer sizes are selectable from 1 byte to ½ megabyte, allowing the spooler to handle printing while the PC does other work.

Included are preconfigured drivers, a screen-oriented configuration editor, a command facility with status and Help functions. *(List Price: $59.95 including a user guide with tutorial reference and diagnostic information)*

Requires: DOS, asynchronous communications adapter.
The Gauge Group
P.O. Box 34082
Phoenix, AZ 85067
(602) 279-1533



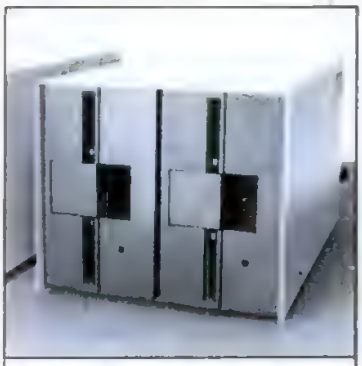
Epson Nylon Ribbon Replacement Cartridges, Aspen Ribbons, Inc.

Data Management System (DMS)

A self-prompting, menu-driven program that allows users to create data entry forms directly on their screens. These forms can then be used for data entry, retrieval, modification, correction, deletion, and report printing. A complete data base of user-specified format and content can be kept and accessed using the DMS program.

Data base files are maintained in a sequential ASCII form that can be processed by a program written by the user in BASIC, Pascal, C, and assembly language. It allows DMS to have a secondary use as a front-end data entry program for user-written applications systems. *(List Price: $150)*

Requires: 48K, one disk drive.
Intellect Associates Inc.
P.O. Box 365
Holbrook, NY 11741



External Drives, Peripheral Technology

Concurrent CP/M-86

A single-user multitasking operating system that allows users to accomplish several tasks simultaneously. Multiple list devices are supported with up to 16 drives managing up to 512 megabytes each. File integrity is ensured with the Record and File Locking functions. Protection for user files and directories is enhanced through the optional use of passwords. Features can be used to monitor real-time events. Process synchronization and communication are sup-

New On The Market



Disk Drive Cover, Nat Hellman III Inc.

ported under CCP/M-86 by queues.

Features include virtual console environment and compatibility with CP/M-86 and MP/M-86 operating systems. The operating system can also manage up to 1 megabyte of memory and support shared code. *(List Price: $350)*

Requires: 256K, two disk drives, (printer recommended).

Digital Research
P.O. Box 579
Pacific Grove, CA 93950
(408) 649-3896

Sort/PC

A sort/merge program that can sort records of up to 32,760 bytes. The program allows for up to 20 distinct sort keys and can sort character, numeric, and packed decimal fields in ascending or descending order. The program also allows for up to 10 input files and can be invoked from DOS or an applications program. *(List Price: $67 including documentation; documentation only, $12)*

Requires: 48K, two disk drives.

Icon, Ltd.
P.O. Box 57380
Washington, DC 20037
(202) 429-9607

Championship Blackjack

A game that employs a realistic table layout and can be used by as many as six players. Single players can also use the program with the PC filling in for the other five players. The program can suggest moves and will provide a rundown of the number of hands won, wins over losses, and overall highest scores at the end of each game. *(List Price: $34.95)*

Requires: 64K, one disk drive.

PCsoftware
4155 Cleveland Ave.
San Diego, CA 92103
(714) 279-2482

P-Edit

A full-screen program/text editor that uses a virtual edit buffer. The buffer makes it appear to the user as though an entire file is in the edit buffer regardless of file size. *P-Edit*'s features include search and replace, block or range, dynamic insert, horizontal scrolling, variable tabs, half-tab, and duplicate line and field. Block or range operations include copy, move, delete, append, and print. A built-in help and self-instruction feature is also included. *(List Price: $195)*

Requires: 48K, one disk drive, 80-column display.

Satellite Software International
288 West Center
Orem, UT 84057
(801) 224-8554

Ultra Menu

A menu-driven business utility program that allows users to format or back up a disk and copy or run a BASIC program. The program was designed for clerical staff and computer novices who want to run and maintain BASIC software.

Function keys are used to limit the number of keystrokes while simplifying processing. The Esc key is used to abort programs in process, when possible, returning the user to the main menu. Because of the function key and Esc key uses, DOS commands such as Format, Copy, and Diskcopy can be employed without extensive knowledge of manuals. *(List Price: $39.95)*

Requires: 48K, one disk drive, 80-column monitor, DOS 1.0 or 1.10.

BusinesSoft, Inc.
3811 Brett Ln.
Glenview, IL 60025
(312) 940-8088

Micro-Football

A football simulation program that employs graphics and sound effects to create a pro-style football game. The program provides NFL strategies and formations, offering the player a choice of 14 offensive plays and four defensive alignments. *(List Price: $29.95)*

Requires: 64K, color/graphics adapter.

Westwood Software
1670 N.W. Emperor Dr.
Corvallis, OR 97330
(503) 745-5500

Andromeda Conquest

A strategy simulation game of forming and protecting galactic empires. One to four players act as emperors of their respective species. Each player accumulates and guards resources while managing space colonies. *(List Price: $23)*

Requires: 48K, one disk drive.

Avalon Hill Game Company
4517 Harford Rd.
Baltimore, MD 21214
(301) 254-5300

Microcosm

A strategy-simulation game based on the mathematical simulation of birth, life, migration, and death among populations of cellular organisms. The game provides different levels of competition. The user can store and recall population patterns, both standard and user-created, and preview how moves will affect the next "generation." The "Programmed Tutorial," one of the menu-driven options, instructs inexperienced users in playing the game. The game is based on John Horton Conway's 1970 "The Game of Life." *(List Price: $39.95 including manual; $2 handling)*

Requires: 64K, one disk drive.

Aeon Concepts
Computer Products Division
1657 Red Mill
Pittsburgh, PA 15241
(412) 831-5352

Financial Modelers' Personal Financial Statements

A financial planning program for financial advisers. The program allows users to develop a picture of a client's financial position and then try different investment options to see how that position can be improved.

Two sets of financial statements showing balance sheet, taxable income, and cash flow can be projected as far as 5 years in advance. One set details the client's present position, and the other the effect of the user's advice. The package also includes tax tables, investment tables, tutorial models, and a teaching manual. Because the program models are connected, the effect of investment advice can be immediately reflected in the client's cash flow, taxes, and net worth. *(List Price: $725)*

Requires: 96K, one disk drive, *VisiCalc 1.10*.

United Financial Modelers
26 Main St.
Concord, MA 01742
(617) 369-4218



NISS™...

Your Source of Business Planning and Forecasting Software

FREE CATALOG! 1 800 CALL

NISSCAST™

NISSCAST is a sophisticated financial program and the *first* forecasting software for personal computers that incorporates *seasonal adjustments*. The exceptional structure of **NISSCAST** allows you to perform seasonal adjustments on the historical data and view results with the graphics option.

PERSONAL COMPUTER SOFTWARE SUPPORT SERVICE

NISS offers one full year of support service for each program acquired from the company. This unique service provides you with direct access to the **NISS** staff of professionals who will courteously help solve software problems on your personal computer. Support service agreements are also available for business planning and forecasting programs acquired through other sources.

TOLL FREE HOTLINE

Call **NISS** now at **1-800-525-SOFT** for your free software catalog and for information on our unique support service. You won't be left "friendless" once you license software from **NISS.**

NISS supports its software when it is used on IBM PC.

Maximize your productivity and profit from a relationship with **NISS.**

DEALER INQUIRIES INVITED

niss

NATIONAL INTEGRATED SOFTWARE SERVICES, INC.
8800 East Arapahoe Road, Englewood, Colorado, 80112

NISS is a registered trademark of National Integrated Software Services, Inc.
Apple II plus is a trademark of Apple Computer, Inc.
IBM Personal Computer is a trademark of International Business Machines, Inc.
TRS-80 Model II is a trademark of The Tandy Corporation.

1-800-525-SOFT

In Colorado (303) 694-1994

QD

In this world of details, numbers and paperwork, where does one even start to make sense of it all?

Data Base Manager will help you keep track of virtually any information—and keep that information up-to-date and accurate!

Easy to Use

Data Base Manager is so easy to use that you will be able to record, access, and print valuable information after listening to the *spoken instructions*—a short, hands-on tutorial which comes with the program.

Powerful

Data Base Manager is a powerful software product that will help you do all of the following—and more!

- Design and print a report showing sales regions sorted and subgrouped by profits.
- Design and print a report which automatically calculates dollar sales by multiplying unit sales and unit costs.
- Find all customers who live in the Northeast, have low credit ratings, and outstanding balances—send them a letter explaining a new bank payment plan.
- Sort your mailings by zip code—save money on bulk mailing rates.
- Find a name or address even if you forget the exact spelling.



Below is an example of a simple report you can generate with a few keystrokes. By sorting the DAYS OVERDUE column, the billing department knows which customers are late with their payments.

BALANCE OUTSTANDING REPORT

COMPANY	BALANCE	DAYS OVERDUE
ABC Company	23456	82
Jones Company	390	80
York Company	34569	80
GFD Corporation	1000	71
Ace Manufacturing Co.	87990	65
Applied Technologies	4567	61
M and Z Corporation	9000	50
Tyne Industries	7000	45
Advanced Systems	4390	28

NOTE: Send reminders to all accounts overdue 60 days or more

Features

- Searches—Phonetic Search
  Wild Card/Key Word Search
  Three-Level Search on Any Criteria
- Sorts—Numeric and Alphabetic
  Ascending and Descending Order
- Reports—Automatic Tabbing and Layout (with Override Capability)
  Preview Reports on File
  Accommodates up to ten custom-designed reports
  Computed Optional Field Capability
  Flexible Format Mailing List
- Lets you know how many records you have on file and how many you can add
- Takes advantage of your printer's condensed mode automatically if needed
- Uses one program and one data disk—no disk switching required
- Works with DOS 1.0 and DOS 1.1
- Stores up to 2800 records per disk with DOS 1.1

Program Requirements

IBM Personal Computer with 64K of memory
Two disk drives (DOS 1.0 or 1.1)
Supports all monitors
Supports the following printer lines: IBM PC, Epson, IDS, NEC, Okidata

IBM PC is a trademark of IBM Corp
EPSON is a trademark of Epson of America, Inc
IDS is a trademark of Integral Data Systems Corp
NEC is a trademark of Nippon Electric Corp
Okidata is a trademark of Oki Electric Industry Corp

Data Base Manager for the IBM Personal Computer—$245—available today. Call 1-800-451-1018 for your nearest dealer.

Other Alpha Products for the IBM PC are: The Apple-IBM Connection, Mailing List, Question, and Type Faces.

alpha SOFTWARE CORP

12 NEW ENGLAND EXECUTIVE PARK BURLINGTON, MASS. 01803
(617) 229-2924

Index To Advertisers

ADVERTISER	LOCATION
Abacus Tax Software	70
Accusoft	359
Advanced Operating Systems	229
Aegis Systems	166
AEON Concepts	98
Aerocomp	303
Affordable Software, Inc.	340
Alpha Byte Computer Products	57
Alpha Software Corp.	138,392-393
Alphanetics	294
Alta Systems, Inc.	354
Amdek Corporation	266
American Computer Products, Inc.	63
American Planning Corp.	283
American Training International	26
Ann Arbor Software	21
Apparat, Inc.	214
Applied Creative Technology, Inc.	252
Applied Software Technology	223,337
Apstek, Inc.	355
Arlington Software Systems	293
Armonk Corporation	59
Arrix Logic Systems, Inc.	211
Artificial Intelligence Research Group	350
Ashton-Tate	120-121
Aspen Software Company	164 ,165
AST Research Inc.	184-185
Atara, Inc.	198
Automated Business Machines Inc.	122
BASF	39
B.C. Systems Inc.	315
Beaman Porter	91
Best Programs	179
Bible Research	289
Binary Research	270
Bit Software	355
Blue Chip Software	194
Blue Water Systems	244
Bottom Line, The	124
Bruce & James Program Pub.	398-399
B.T. Enterprises	245
Business Master	351
Cactus Technology	79
California Micro Computer	357
CBS Ed. & Prof. Publishing	151
Checks-To-Go	144
Circle Micro	359
CNGA	332
ColorCorp	321
Columbia Data Products, Inc.	279
Comprehensive Software Support	12
Compucart	183
Compushack	311
CompuSoft Publishing	66
Computech Group Incorporated	24
Computer Advantages, Inc.	253
Computer Age of San Francisco	351
Computer Applications Unlimited	223
Computer Case Company	83
Computer Control Systems, Inc.	310
Computerenergy	177
Computer Exchange	324
Computer Innovations, Inc.	254
Computerized Management System	312
Computer-Mate, Inc.	356-357
Computer Specialties	351
Computer Systems	359
Computer Systems Design, Inc	350
Computerwise Inc.	317
Computer Workshop	354
Computerworld International, Inc.	288
Condor Computer Corporation	126
Consultant Systems, Inc.	382-383
Continental Software	231
Contract Services Associates	161
Coosol, Inc.	303,355
Corona Data Systems	7
Corvus Systems	112
Creative Graphics	353
Creativity Unlimited	349
cti/Computer Technology Innovations	215
Curtis Manufacturing Company, Inc.	255
Cybernetics, Inc.	89
Data Consulting Group	354
Datamost	135,186,250
DataSource Systems	276
Davong Systems, Inc.	27
Decision Resource	338
Diamond Software Supply Co.	238
Digital Engineering Group	352
Digital Marketing	28
Digital Research	8-9,18
Disk Supply Co.	357
Distributed Computing Systems	300
Distributed Software Systems	62
Dow Jones	34
DP Computer Services	230
Electronic Data Systems Corp.	35
Electronic Specialists, Inc.	361
Emerging Technology Consultants, Inc.	262
Entelekon	108,146
(EPYX)	169
Escon Products, Inc.	236
Fantasia Systems Incorporated	349
Fast-Lane Computer Products	354
Financier Corporation	IFC
Flagstaff Engineering	353
Fox & Geller	242
Frank Schiele Software	61
Fredericks Electronics (Plantronics)	239
Friendlysoft (FriendlyWare)	234
FTG Data Systems	227
Futra Company	362
Game Mania, Inc.	267
Genie Computer Corp.	137
H & E Computronics, Inc.	237
Hercules Computer Technology	45
Howe Software	349
IB Magazette	201
IBM Corporation	97
ICR FutureSoft	308
Indigo Data Systems, Inc.	47
Individual Software	341
Information Unlimited Software (IUS)	60
Inner Loop Software	229
Insoft	119
Integral Data Systems	189
Intek	219
intellect associates inc. (iai)	355
Interactive Tutorial Systems	77
Interface, Inc.	310
Intermedia Systems	51
International Software Alliance (ISA)	251
Intersoft	207
Ipex International, Inc.	352
Johnson Associates Software	171
Jones Futurex	50
Laboratory Microsystems	224
Lawrence Woodworks	258
Leading Edge Products, Inc.	F 5-6,128-129,401
Lifeboat Associates	199
Lifetree Software Inc.	52
Link Systems	193
Masterworks Software, Inc.	204
Max Software Publishing (Willoughby Corp.)	42
MBP Software Systems Technology Inc.	261
M/CN, Inc.	55
Med Systems Software	327
Memory Technologies Inc.	101,113
Mentor Computer Services	362
METAFILE	263
Metasoft Corporation	212
Microcomputer Business Industries	269
Microcomputer Business International (MBI).	
Micro Flash	363
Micro-G	61
Micro Grip	358
Microhouse	152-153
Micro Instructional Inc.	160
Micro Investment Software (MIS)	318
Micromart	205
MicroPro	36-37
Micro Processors Unlimited	355
Microsoft, Inc.	1,40-41
Micro Systems Exchange	361
MicroWare	292
Miller Microcomputer Services	291
Mountain Computer, Inc.	271
Nat Hellman III Computer Accessories	336
NEC Information Systems, Inc.	87
Net Computers Inc.	14,140,380
Network Consulting, Inc.	116
N.F. Systems, Ltd.	351,362
NISS	391
Norell Data Systems Co.	229
Northeast Expositions, Inc.	306
Oasis Systems	335

ADVERTISER	LOCATION
OMICRON	46
Omric	245
Optimum Data Processing	360
Organizational Management Systems	358,359
Owl Software	69
PBL Corporation	319
PC Cat	114
PC Connection	173
PCEZ Software	259
PC-Logic Systems	357
PC Software Inc.	96
PC Software	197
(PC)²	342
Peachtree Software	162
Percom Data Company Inc.	154
Perfect Software	33
Performance Engineered Programming	360
Persoft Inc.	361
Personal Computer Products	360
Personal Data Systems, Inc.	78
Persyst, Inc.	257
Peter Norton	319
Practical Peripherals, Inc.	10-11
Procomp International	343
The Program Store	298
ProSoft Inc.	314
Professional Micro Systems	218
Professional Software, Inc.	344-345
Proximity	159
Pure Data Ltd.	246,320
Puyallup Valley Software, Inc.	362
Quadram Corp.	14-15,22
Quala	230
Qubie' Distributing	192
QuCeS, Inc.	191,280
Quest Research, Inc.	363
Radio Technology	318
Random Access Corporation	170
Redgate Publishing Co.	53
Riverlake Systems	360
Robert J. Brady Co.	90
Rocky Mountain Software Systems	350
Satellite Software	361
Saturn Consulting Group, Inc.	353
Sierra-on-Line, Inc.	56
Sigma Designs	217
Simple Soft	167
Single Source Solution	200
SJM Methods, Inc.	117
Smorgasbord Software	99
Sofstar	176
Soft Solutions	357
Soft Spot Micro Systems	194
Softech Microsystems	95
Softrend Inc.	254
800 Software	213
Software 1040	147
Software Banc	282
Software Laboratories	58,386
Software Masters	314
Software Models	363
Software Options	178
Software Solutions	196
Software Technology for Computers	297
Sorcim Corporation	2-3
SourceWare	358
Southeastern Software	174
Spectrum Software	202
Spinnaker Software	80-81
Squire Buresh Associates Inc.	352
SSR Corp.	317
Stack Works	352
Star Micronics, Inc.	68
STB Systems, Inc.	346
Stone Software Publishing, Inc.	363
Strictly Software	106
Super Computer, Inc.	110
SuperSoft	104
Survey Systems Inc.	51
Sybex	249
Symtec, Inc.	353
Synergistic Software	260
Systemics	118
Systems Management Associates	361
TAC	65
Tall Tree Systems	133
Tallgrass Technologies Corporation	54
TCI Software	309
Techland Systems, Inc.	304
Techmar, Inc.	OBC
Telecon Systems	349
TexaSoft	285
Ticom Systems, Inc.	67
TG Products	130
tk eng.	100
Tokyo Electronics	186
United Microsystems	322
United Software	281
United Systems, Corp.	391
UOI Company	350
Vector Electronic Company	358
Verbatim	16
VisiCorp	82
Vista Computer Company, Inc.	206
Von Leivendyke Enterprises	111
VR Data Company, Inc.	312
Wesper Micro Systems (Wespercorp)	396
Westico Inc.	88
Westwood Software	348
Williams & Foltz	6
XEDEX Corporation	103,105,107
Xyquest, Inc.	92
Your Business Software	76
Zele, Stokes & Harbour (U.M.S.)	322
Zobex	210

I. B. MAGAZETTE

New Form of Two-Way Communication

•

Magazine on Diskette

•

National User's Group

•

Program Exchange

•

Medium for Free Exchange of Information Between PC Users

•

Recreational, Educational, Easy to Use New Idea

•

Fun

Each issue (on diskette) will be mailed to you. After reading the issue, the diskette is copied & returned to us so that we may review your input of programs, comments or questions for possible inclusion in a future issue.

REQUIRED: IBM* PC WITH 48K AND ONE DISK DRIVE

INITIAL DISKETTE $15.00. SUBSEQUENT ISSUES $10.00 WITH RETURN OF DISKETTE.

TO JOIN COMPLETE FORM & MAIL WITH YOUR CHECK TO:

I. B. MAGAZETTE
1306 Petroleum Tower
Shreveport, LA 71101

Name

Address

City

State/Zip

IBM is a trademark of Business Machines Corp

Wizard-spooler™

BUFFERED PRINTER CONTROLLER
is now available for your IBM-PC*



WHAT'S A SPOOLER
It allows you to continue to use your PC while your printer is printing. For example, in 30 seconds 16,000 characters are sent to the SPOOLER, but you no longer have to wait the 25 minutes it takes for you IBM-PC Printer to finish printing.

WIZARD-SPOOLER FEATURES:

- ★ 16K bytes of "character buffering" optionally expandable to 32K or 64K bytes.
- ★ A transparent computer-to-printer link compatible with IBM DOS, most IBM software and expansion boards.
- ★ Automatically maximizes printer speed.
- ★ Low power consumption, cool operation, minimum load on the power supply.
- ★ Built-in Buffer Self-Test.
- ★ Full 2-year warranty.
- ★ Backed by the world's #1 independent manufacturer of peripheral controllers.

*Registered trademark of IBM

Two versions of the Wizard-Spooler are offered:
Parallel Only version $289
Parallel/Serial version $349.

Distributor and Dealer inquiries invited



WESPER MICRO™ Systems

SUBSIDIARY OF WESPERCORP

3188 Pullman Street,
Costa Mesa, CA 92626
(800) 854-8737
(714) 850-1666

We'd like to introduce you to

WESPER MICRO™ Systems

Home of The Wizard™

We're the microcomputer peripherals division of WESPERCORP. Wespercorp is the world's largest independent producer of controllers for minicomputers such as IBM, DEC, Data General and Perkin Elmer.

The Wizard-Spooler is the latest of our expansion products for your micro-computer, and the first of many for the IBM-PC.* For the Apple II,** we already produce:

- ★ 80-Column card
- ★ Buffered Printer Output card
- ★ Serial Output Buffer card
- ★ 16K RAM card

All Wizard products offer you outstanding performance and value. We back all our products with a full 2-year factory warranty.

We invite you to try Wizard products at your computer store.

Direct distributior and dealer inquiries to Carl Burlin at Wesper Micro Systems, 3188 Pullman Street, Costa Mesa, CA 92626. (800) 854-8737 · (714) 850-1666

*Trademark of IBM.
**Trademark of Apple Computers, Inc.

Coming Up

Merry Christmas From *PC*!

Kids, you may not get a PC for Christmas, but you will get a stocking full of reading enjoyment with the December issue.



Forty Games

Adventure games, word games, games of strategy, gambling, playing the stock market, and more!

Computer Camps

How to choose the camp that's right for you or your child.

A PC In Every Classroom

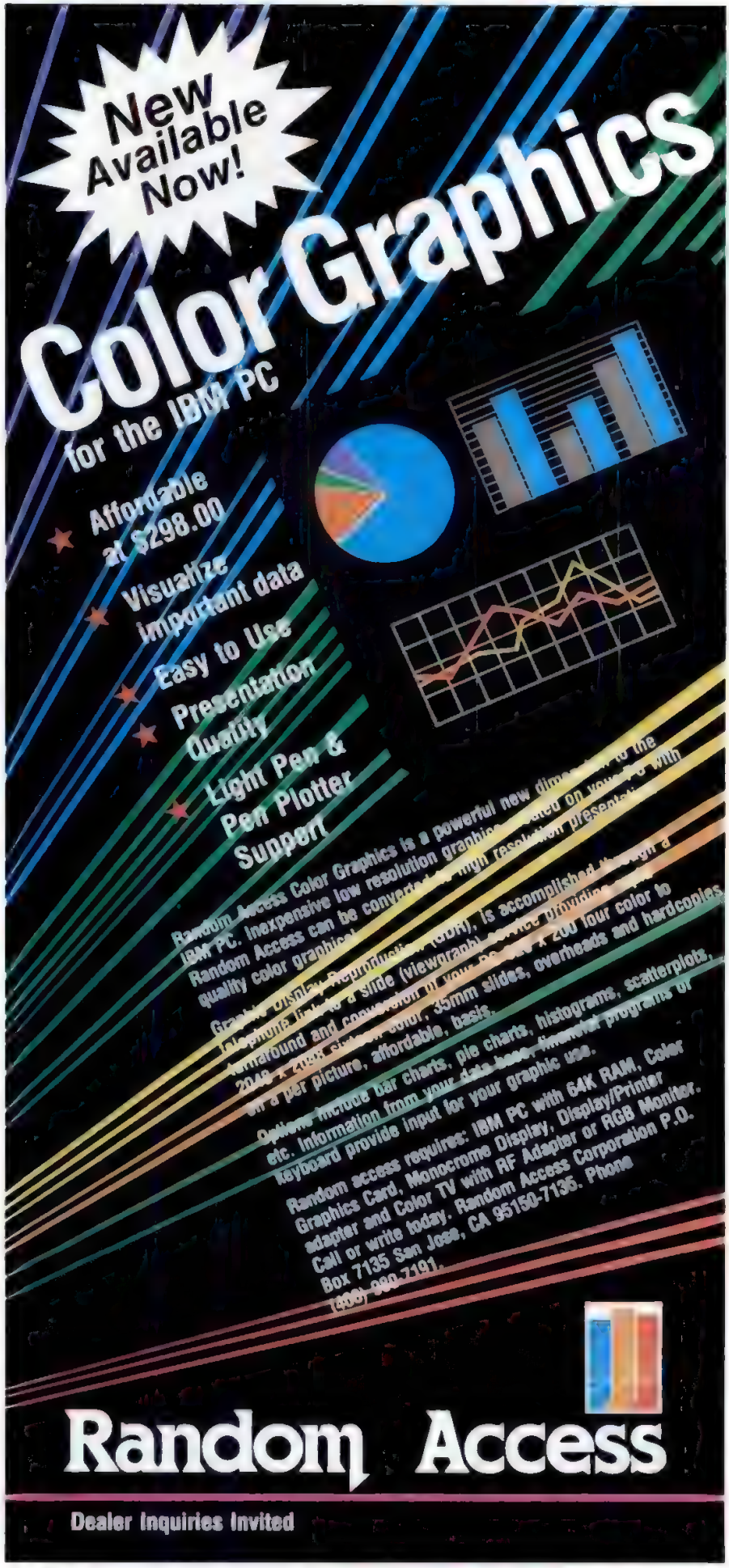
A round-up review of instructional software for the PC. Courseware to teach basic arithmetic, computer science, and how to use *VisiCalc*.

Uncle Sam and the Yuletide Spirit

How to take a tax deduction on a PC purchased this year or next.

PC: BMOC (Big Machine On Campus)

Two universities that find the IBM PC is useful as well as fun.



WHY WE CREATED THE FIRS DOESN'T MAKE YOU WOR

by JIM EDLIN, PRESIDENT – BR



A "writing tool" is what we call our improvement on conventional word processing. My company has just created a writing tool program for the IBM Personal Computer — WORDVISION™ — that breaks new ground in two directions. First, WORDVISION is far easier to use than earlier programs. Second, WORDVISION'S suggested retail price is far lower than prevailing levels. I'd like to tell you how and why we accomplished this.

Today's programs leave plenty of room for improvement.

As tools to assist your personal writing, existing word processors are hamstrung by two leftover influences: Yesterday's computers. And yesterday's jobs.

Existing programs have roots going back to computers much less capable than the IBM PC. Incredibly, these programs still bear the mark of design constraints imposed back when editing was done on teletypewriters that slowly clacked out copy. They also are shackled by designs intended either for a dictator-and-secretary context or the writing of computer program code — both of which have different needs from personal writing. The effect is that to learn and use them you have to work harder than is now necessary

WORDVISION was designed from scratch for the IBM PC.

In several ways, IBM's Personal Computer is more powerful than earlier machines, small *or* big. Its built-in display eliminates need for any terminal — either the teletypewriter or newer video kind. The PC's display can be changed from top to bottom in an instant, allowing program features not possible on computers using terminals. Also, the PC's screen can show details like underlining and bold printing, either directly or using colors. Another assist is the array of useful keys found on the PC keyboard but not on old-fashioned terminals; these provide easy ways to control a program's operation. And the PC is designed to have plenty of memory, which also encourages easy-to-use program design. To use all this power, we began WORDVISION'S design with a clean slate. The result is a program that, unlike its predecessors, won't ask you to memorize arcane codes or keep track of disorienting modes.



If you understand traffic lights, you already know one of WORDVISION'S *main operating principles*

WORDVISION includes a set of handsome, full-color key legends that affix to your keyboard and show you the available controls. (Optional replacement keycaps will also be available.) Where other programs suggest you read their manual when you get stumped, WORDVISION is so easy you can usually just read the keyboard instead.

WORDVISION is designed for your personal writing.

Early word processing programs were designed either for computer programmers or secretaries. But programmers are used to dealing with computer idiosyncracies, and the secretarial process is a linear, static incorporation of someone else's requested changes in how a document looks or what it says. Our writing tool is specifically designed for the more fluid, dynamic process of interacting with your own words — where each new thought may inspire changes anywhere in your text, and you want to see easily how a change would look or sound.

WORDVISION, THE SUFFIX — VISION APPLIED TO PERSONAL COMPUTER PROGRAMS, AND POWERPACK ARE TRADEM

WRITING TOOL" THAT, AT $49.95, DO HARD OR PAY TOO MUCH.

JAMES, PROGRAM PUBLISHERS



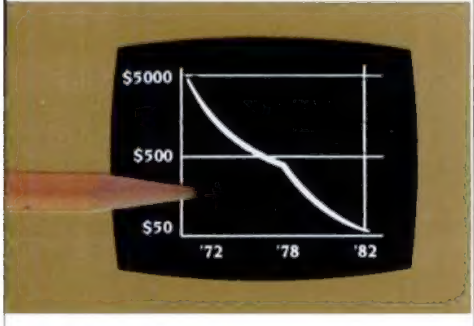
WORDVISION'S ease helps account for its low price.

A program that lots of people are able to use can sell profitably at a price lots of people can afford. WORDIVISION'S low price marks the next stage in the evolution of the program marketplace.

WORDVISION sells for as little as one-tenth the price of earlier word processing programs, but when those were introduced they had the same relationship to the $5,000 programs then being sold for prior-generation computers. The large number of personal computers IBM is selling lets us spread our costs over lots more copies than earlier programs.

There are other factors too: We've eliminated the need for expensive "support" that others must build in to their program prices. With the help of our WORDVISION Pioneer corps (see below) we'll refine out any confusing parts before publication. Also, WORDVISION doesn't ask you to buy features most people don't need. WORDVISION by itself is a good, solid tool for personal writing. Additional "bells and whistles" that some people require will be offered separately as WORDVISION POWER-PACKS. You have to buy only what you can use.

Further explaining our low price is that we want you as a customer for the whole family of easy-to-use programs we'll be introducing over the coming months. Once you see how easily WORDVISION works for you, we expect you'll find the others hard to resist.



Program Price Trend

WORDVISION FEATURES

CONTROL OF CONTENT:

DELETE (9 KINDS, PLUS UNDELETE)
MOVE OR COPY MARKED SECTIONS
CAPITALIZE AND UNCAPITALIZE
SWAP ▪ FIND AND REPLACE
TWO-KEY PHRASES
... AND MANY MORE

CONTROL OF APPEARANCE:

MARGINS ▪ TABS ▪ INDENTING
UNDERLINING ▪ BOLDFACE
SINGLE AND DOUBLE SPACE
... AND MANY MORE

SYSTEM REQUIREMENTS: 64K OR MORE MEMORY, 1 DISK DRIVE, IBM MONOCHROME OR 80-COLUMN COLOR MONITOR.

Coming soon at your local bookstore.

One other way of keeping WORDVISION'S price low is by selling it in a brand new place for personal computer programs — bookstores. WORDVISION will be on sale at major bookstores, as well as other selected program retailers, beginning in early 1983. If your favorite store doesn't have it, ask them to call our toll-free number and order it for you. Or, for an advance copy, see the adjacent special offer.

How to get a copy two months before the rest of the world, and maybe for free:

A SPECIAL OFFER FOR PIONEERS — If you'll help us put the finishing touches on WORDVISION, we're prepared to make it worth your while. Buy a copy of our limited Preview Edition and you will get:

- An advance copy of our powerful WORDVISION program that you can put to use at least two months before most buyers.
- The opportunity to contribute your input on WORDVISION'S final form. (And if you are first to point out a mistake we fix, or make a suggestion we adopt, we'll refund your purchase price — making your copy free — plus credit you as a contributor.)
- First delivery of the fully polished, official version of WORDVISION — in a special signed and numbered Pioneer's Edition.
- As a bonus with your official edition, a free copy of our Translation PowerPack (suggested retail price, $19.95) that lets you convert text created with other IBM PC programs for use with WORDVISION.
- First crack at similar Pioneer offers for the many powerful new programs and PowerPacks we plan to introduce soon.

This limited offer is first-come, first-served, except we reserve the right to select participants to make sure our Preview Edition is put to work in a wide variety of settings. To participate, write us with details of your IBM PC system, the ways you plan to use WORDVISION the name and address where you would like it sent, and enclose $49.95. (Ohio residents please add sales tax.) Or call our toll-free number — 800/531-1309 — if you wish to use your charge card. (In Ohio, call 614/766-0110) If you're too late for the Preview Edition, we'll put your name on a priority list to receive WORDVISION when it is officially introduced.

B&J

Bruce & James, Program Publishers

4500 Tuller Road, Dublin, OH 43017
614/766-0110
CompuServe 71435,1040

& JAMES, PROGRAM PUBLISHERS. IBM IS A REGISTERED TRADEMARK OF INTERNATIONAL BUSINESS MACHINES CORP.

Copyrighted material

Wish List



A reasonably priced expansion board which would have 640RAM and the necessary ROM to contain the software to use the extra memory as the two 320K floppy disk equivalent.

Robert L. Cohen M.D.
East Elmhurst N.Y.

Disk ejectors, so that disk removal would be easier.

Bob Hayes
Dallas, TX.

A diskette directory that I can use to keep track of which file is on which diskette.

Glen Siegel
Thornhill Ontario

Illustration: Stuart Bradford

PC invites readers to contribute Wish List ideas for publication. Any product, service or design idea you'd like to see for the IBM Personal Computer is appropriate. Ideas selected for publication may be illustrated by PC's artist. PC will pay $25 for the featured Wish List idea in each issue, $10 for others published. All ideas published will be credited to the submitter and become the property of PC. In case of duplicate submissions, any award will go to the earliest postmark. Send a description or sketch of your idea to: *Wish List, PC, 1528 Irving St., San Francisco, CA 94122.* Sorry, we can't discuss the Wish List feature by telephone.

Copyrighted material

THE PROWRITER COMETH.

(And It Cometh On Like Gangbusters.)



Evolution.

It's inevitable. An eternal verity.

Just when you think you've got it knocked, and you're resting on your laurels, somebody comes along and makes a dinosaur out of you.

Witness what happened to the Centronics printer when the Epson MX-80 came along in 1981.

And now, witness what's happening to the MX-80 as the ProWriter cometh to be the foremost printer of the decade.

SPEED

MX-80: 80 cps, for 46 full lines per minute throughput.
PROWRITER: 120 cps, for 63 full lines per minute throughput.

GRAPHICS

MX-80: Block graphics standard, fine for things like bar graphs.
PROWRITER: High-resolution graphics features, fine for bar graphs, smooth curves, thin lines, intricate details, etc.

PRINTING

MX-80: Dot matrix business quality.
PROWRITER: Dot matrix correspondence quality, with incremental printing capability standard.

FEED

MX-80: Tractor feed standard; optional friction-feed kit for about $75 extra.
PROWRITER: Both tractor and friction feed standard.

INTERFACE

MX-80: Parallel interface standard; optional serial interface for about $75 extra.
PROWRITER: Parallel and serial interface standard.

PRICE

Heh, heh.

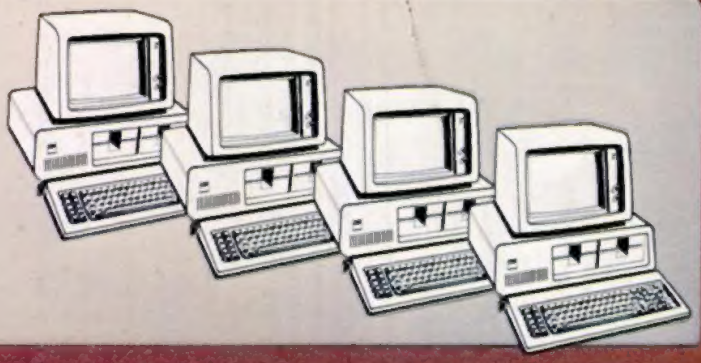
Distributed Exclusively by Leading Edge Products, Inc., 225 Turnpike Street, Canton, Massachusetts 02021. Call: toll-free 1-800-343-6833; or in Massachusetts call collect (617) 828-8150. Telex 951-624.

LEADING EDGE.™

Copyrighted material

SHARED WINCHESTER DISK!

The NEXT STEP from TECMAR



Now, Up to FOUR IBM Personal Computers Can Share the Same PC-MATE Winchester Disk System.

Give each Personal Computer a complete logical device for total READ/WRITE freedom, or they can all share a device for READ Only applications.

All PC-MATE WINCHESTER/5™ and WINCHESTER/10™ disk systems now feature the new ultra fast GT DMA disk controller. This new controller not only provides superior performance, it can serve as the base unit for the Shared Disk Facility.

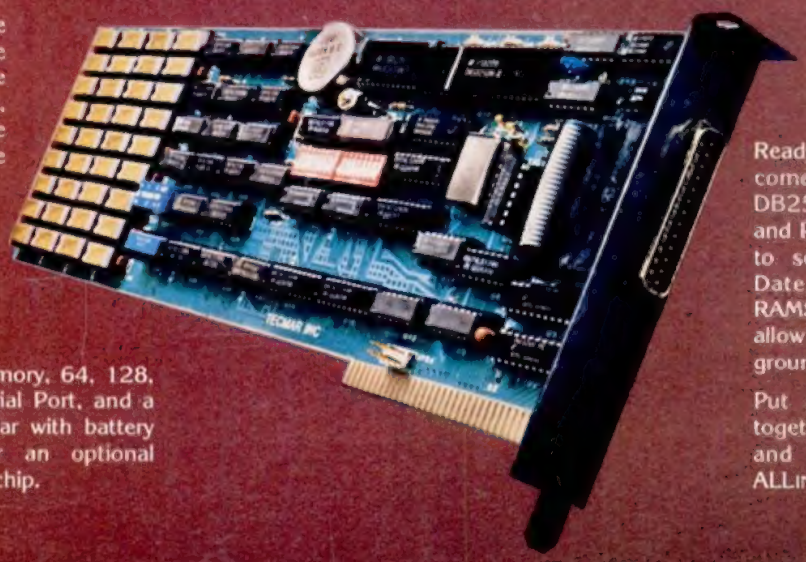
The WINCHESTER/5™ is $2995 and WINCHESTER/10™ is only $3995. Each additional PC to share the disk needs only a PC-SHARE™ adapter at just $495.

An Expansion Chassis, Five or Ten Megabyte Winchester Disk, Superior performance and Disk Sharing are just a few reasons why the PC-MATE™ Winchester Disk System should be your next step.

ALLINONE™ EXPANSION FOR THE IBM PERSONAL COMPUTER.

Memory, Serial, Parallel, Clock/Calendar with Battery and more!!!

PC-Mate™ by TECMAR, the first and only complete line of expansion options for the IBM Personal Computer, now brings you the ultimate expansion product, the ALLINONE™ Board.



ALLINONE™ gives you memory, 64, 128, 192 or 256K bytes, a Serial Port, and a Parallel Port, Clock/Calendar with battery backup and circuitry for an optional Programmable Array Logic chip.

Ready to use, ALLINONE™ comes complete with the DB25 connectors on Serial and Parallel Ports, Software to set system Time and Date, and the popular RAMSPOOLER™ utility to allow printing as a background task.

Put all of these features together with these prices, and you really have it ALLINONE™

$565. - 64K Bytes $735. - 128K Bytes $875. - 192K Bytes $975. - 256K Bytes

Tecmar is currently shipping over thirty different expansion products including Memory, Winchester Disks, Communications Interfaces, Laboratory/Scientific/-Industrial products and more!

*For IBM Personal Computer Expansion, The Next Step . . . . **TECMAR.***

Call or write for product specifications and the name of your nearest participating Computerland and other fine PC-Mate Retailer internationally.

Tecmar Inc.

PERSONAL COMPUTER PRODUCTS DIVISION
23600 Mercantile Road, Cleveland, Ohio 44122
Telephone: (216) 464-7410 Telex: 241735

Copyrighted material